CALIFORNIA
BOARD OF BARBERING AND COSMETOLOGY

AUGUST 8, 2016
Health and Safety Advisory Committee Meeting

Department of Consumer Affairs
Contractor's State License Board
12501 East Imperial Highway, Suite 601
Hearing Room, 6th Floor
Norwalk, CA 90650

California State Board of Barbering and Cosmetology

Health and Safety Advisory Committee Agenda

August 8, 2016
10 a. m - Until Completion of Business

Department of Consumer Affairs
Contractor's State License Board (CSLB)
12501 East Imperial Highway, Suite 601
Hearing Room, 6th Floor
Norwalk, CA 90650

OPEN SESSION:

1. Call to Order/Roll Call.
2. Discussion and Possible Recommendations to the Board Regarding the Proposed Health and Safety Curriculum – Section Three - Safety Data Sheets.
3. Discussion and Possible Recommendations to the Board for Approval of the Safety Data Sheet Tip Sheet.
4. Report on Availability of Less Toxic Disinfectants/Water Usage/ Hospital Grade Disinfectants
5. Review and Possible Recommendations to the Board for Approval of the Disinfectant Tip Sheet.
6. Discussion and Possible Recommendations to the Board Regarding the Proposed Health and Safety Curriculum – Section Nine - Worker's Rights.
7. Review of the Worker's Right Pocket Guide.
8. Review of the Independent Contractor vs. Employee Fact Sheet.
9. Review of The Board's Existing Prohibited Tool Flyer.
10. Update on the Translation Accuracy of the Board's Inspection Report Cover.
11. Approval of Future Meeting Dates.
12. Public Comment on Items Not on Agenda.
    Note: the Board may not discuss or take action on any matter raised during this public comment section, except to decide whether to place the matter on the agenda of a future meeting. [Government Code Sections 11125, 11125.7(a)]
13. Adjournment

Action may be taken on any item on the agenda. The time and order of agenda items are subject to change at the discretion of the Committee and may be taken out of order. In accordance with the Bagley-Keene Open Meeting Act, all meetings of the Board are open to the public.

BarberCosmo
Board of Barbering & Cosmetology

Kristy Underwood
Executive Officer

Edmund G. Brown Jr., Governor
State of California

Department of Consumer Affairs
Board of Barbering and Cosmetology

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No Attachment

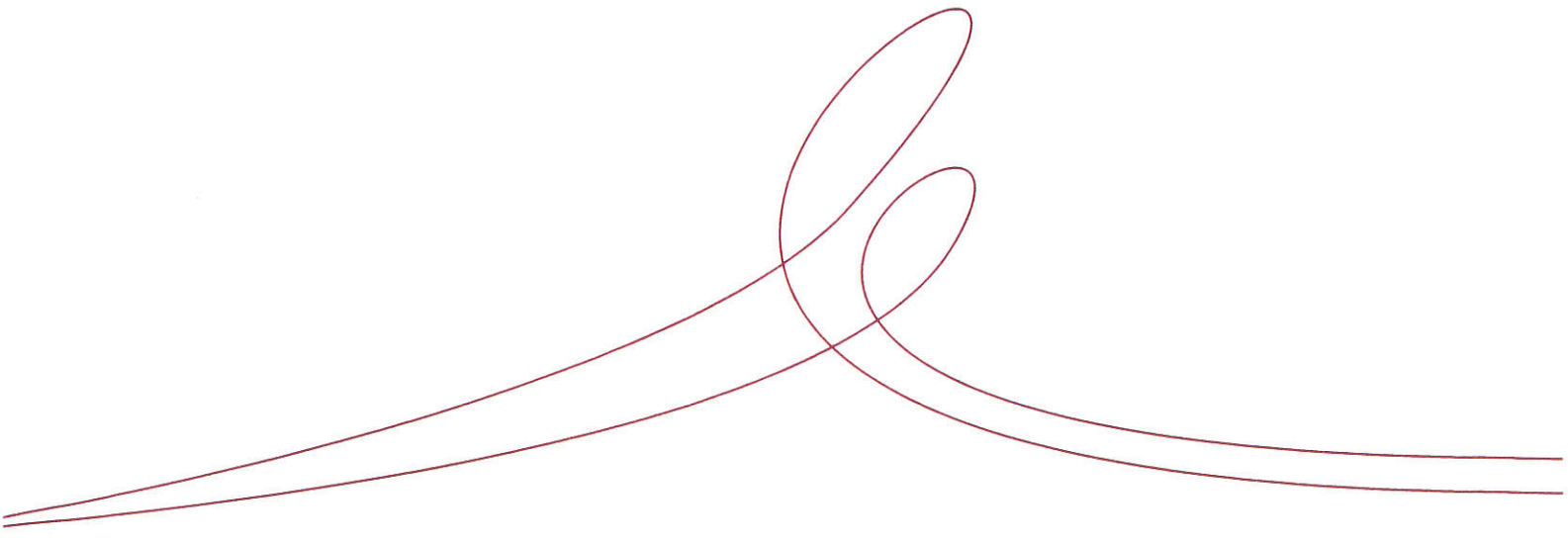
Agenda Item # 2

Health and Safety

TRAINING COURSE

BarberCosmo

Board of Barbering & Cosmetology



2016

Health and Safety

TRAINING COURSE

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BarberCosmo
Board of Barbering & Cosmetology

Foreword

The California Board of Barbering and Cosmetology is very proud to provide instructors and students within the barbering and beauty industry this newly revised training curriculum, Health and Safety Training Course. This training course includes up-to-date and topical information important to the well-being of barbers, cosmetologists, manicurists, estheticians, and the millions of consumers they serve.

The occupational health professionals from the Labor Occupational Health Program, based at the School of Public Health, University of California, Berkeley, worked extensively to research, create, and test the first edition of the *Health and Safety for Hair Care and Beauty Professionals – A Curriculum on Hazards at Work*. This revised publication has incorporated much of their original research.

The Board requires completion of this training course by all students who wish to sit for the licensing exam. The publication can be used in a classroom setting (Instructor led) or as a self-study guide. The Board requires completion of the quizzes within the publication, with a pass rate of 70 percent before a certificate of completion can be given to the student by the instructor. Course completion must be verified by the designated school administrator on the Proof of Training document, prior to the student being allowed to sit for the licensing exam.

Although there is a wealth of information in the pages that follow, the training course is intended to be used as only a guide, a starting point. By using the information the students acquire from this training course, they will be able to follow safe practices at work and hopefully have a long and healthful career.

California Board of Barbering and Cosmetology

July 2016

Training Materials

FILES AT A GLANCE

Section 1

1.1 Introduction to the Board
1.2 What to Expect When You Are Inspected
1.3 Top 10 Violations Fact Sheet
1.4 Self-Inspection Worksheet

Section 2

2.1 What's in That Product?
2.2 Understanding Toxic Substances — An Introduction to Chemical Hazards in the Workplace
2.3 Artificial Fingernail Products — A Guide to Chemical Exposures in the Nail Salon

Section 3

3.1 Risk Phrases — Designated Hazardous Substances
3.2 Sample Letter — To Request an SDS
3.3 SDS Flash Cards
3.4 Resource Groups, Agencies, Databases and Publications Informational Sheet
3.5 Working Safely in Nail Salons Fact Sheet
3.6 Independent Contractor or Employee

Section 4

4.1 Artificial Nails Fact Sheet
4.2 Chemical Hair Relaxers/Straighteners/ Blow Outs Fact Sheet
4.3 Disinfectants Fact Sheet
4.4 Hair Bleaches Fact Sheet
4.5 Hair Color Fact Sheet
4.6 Manicuring Fact Sheet
4.7 Permanent Waving Fact Sheet
4.8 Shampoos and Conditioners Fact Sheet
4.9 Thermal Hairstyling Fact Sheet

Section 5

5.1 Work Smarter, Not Just Harder Poster
5.2 Stay Healthy and Safe While Giving Manicures and Pedicures

Section 6

6.1 Diseases in the Workplace Chart

Section 7

7.1 Health and Safety Rights: Facts for California Workers
7.2 Health and Safety Agency Acronyms Word Search

Section 8

8.1 Health Survey
8.2 Workplace Inspection Checklist
8.3 Resource Agencies and Materials Informational Sheet

Section 9

9.1 Independent Contractor or Employee
9.2 Tax Tips for the Cosmetology and Barber Industry
9.3 Tips on Tips
9.4 OSHA's Workers' Rights
9.5 Nail Salon Workers Wage and Hour Rights
9.6 Recover Your Unpaid Wages with the California Labor Commissioner's Office

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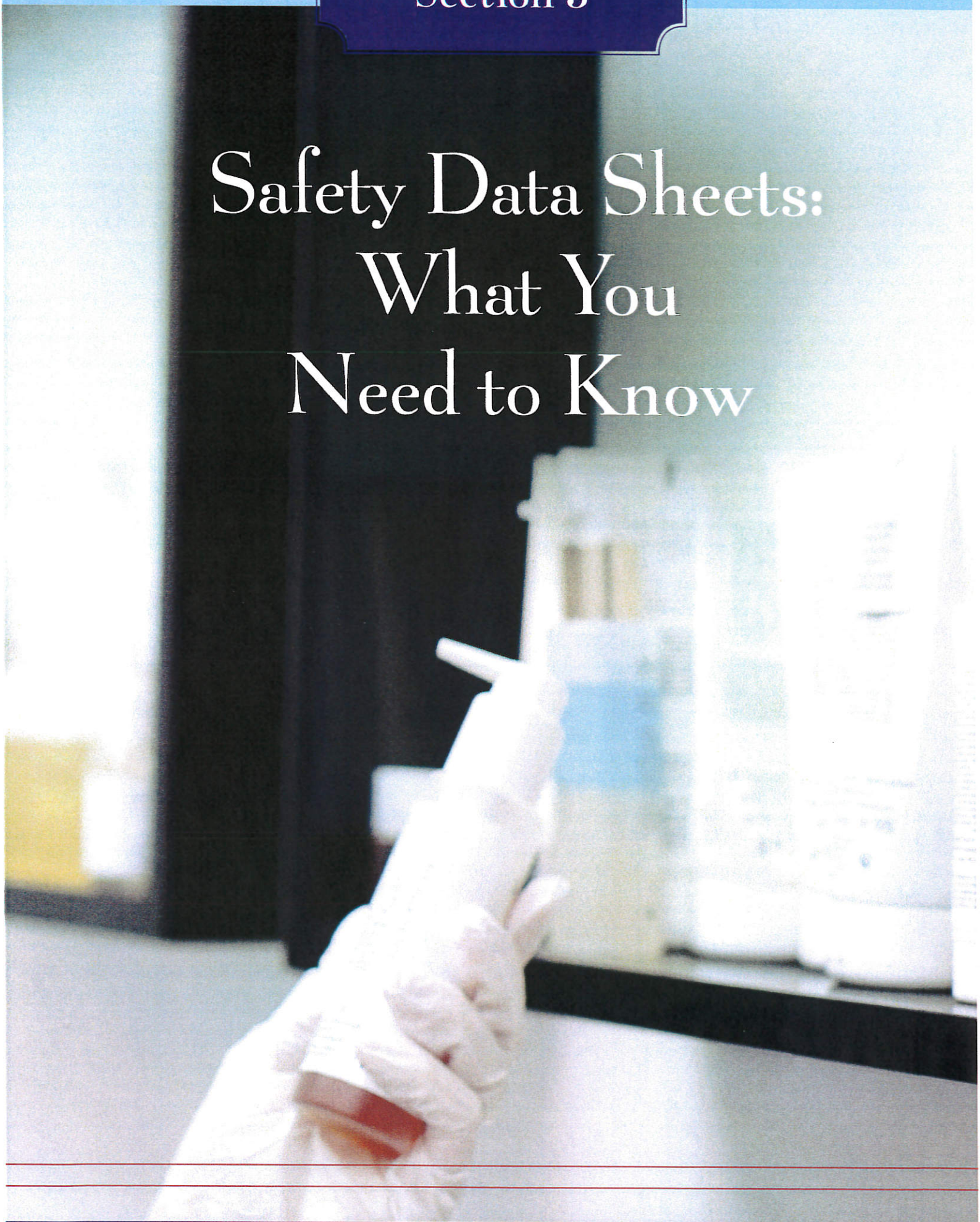
Section 3

Safety Data Sheets: What You Need to Know



LEARNING OBJECTIVES

Section 3

Safety Data Sheets: What You Need to Know

After completing this section, you will be able to:

- Explain what a Safety Data Sheet (SDS) is, and where to get them.
- Recognize the sections of the SDS.
- Demonstrate how to use an SDS to find information about a cosmetic product.

In this lesson we will discuss one of the best ways you can get information about chemicals used in the salon or shop: the Safety Data Sheet (SDS).

What is an SDS?

An SDS is a bulletin that gives useful information about a chemical product and its hazards. This includes:

- The names of any dangerous ingredients
- Health and safety hazards of the chemicals
- Precautions to take when using the product
- Emergency procedures if there is an accident, such as a spill or fire
- Information on the flammability of the product

SDSs are required by law for many chemical products and replaced Material Safety Data Sheets, or MSDSs, effective December 1, 2013.

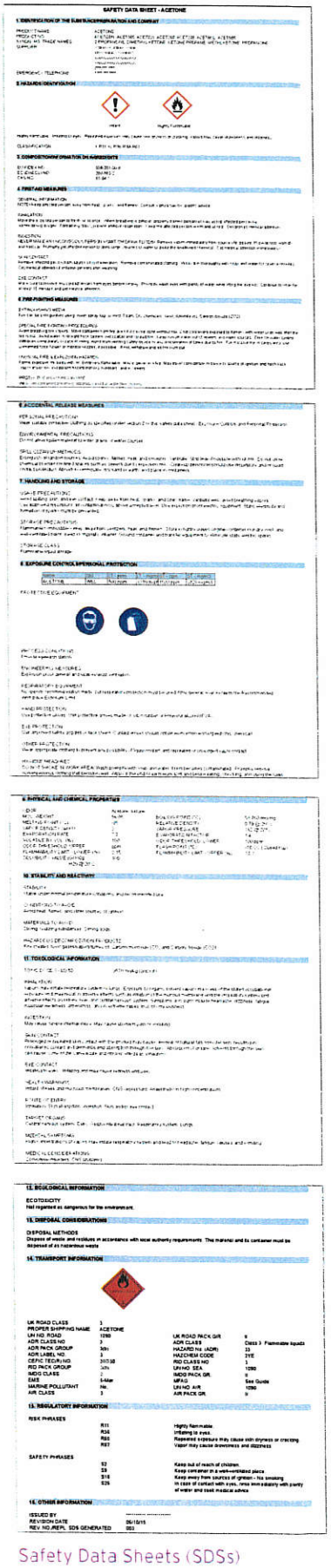
Where Can I Get an SDS?

The simple answer is from your employer. According to Cal/OSHA, employers should keep SDSs readily accessible to employees for all hazardous chemicals in the salon or shop. If there is not an SDS in the establishment for a particular product, the employer must ask the manufacturer or distributor for it. In the training materials file you will find a sample letter to a manufacturer or distributor requesting an SDS that you can use, if needed. If a manufacturer or distributor has not responded to your repeated attempts to request the SDS, you may contact a Cal/OSHA office and file a complaint. A list of offices can be found in the materials training file, "Resource Groups, Agencies, Databases, and Publications."

In addition, employers are required to provide training to their staff on the SDS. Employers should be diligent with their own training so that they will have the correct information to offer to their employees when requested.

Independent Contractors

If you meet the qualifications for independent contractor status, as defined by the Internal Revenue Service (IRS), you are considered an employer and must comply with Cal/OSHA requirements. A copy of the IRS trifold, *Independent Contractor or Employee?* has been provided in the materials training file. Take a moment to review this information so that you will know if you are truly classified as an independent contractor or an employee. Knowing this information will affect your responsibilities when dealing with laws and regulations from the many entities you will work with during your career. For additional information in determining your worker status, please see section 9 of this training manual.



Safety Data Sheets (SDSs)

SDS Limitations

While SDSs provide a lot of useful information not always found on the product label, there is also a major drawback. SDSs can be difficult to read, as you may be unfamiliar with the technical or scientific words used on the document. In those instances, you may wish to search the Internet, do research with a chemical reference book, or consult with one or more of the agencies listed on the "Resource Groups, Agencies, Databases and Publications" list provided in the training materials file.

Now, let's review what you've learned so far.

Questions for Review

Important information on the identity and hazards of a chemical are on the container label. True or False?

How can you get information about the chemicals in a product?

A) Chemical reference books

B) Safety Data Sheets

C) Asking your employer

D) Consulting a state agency

E) All of the above

For answers to all questions, please refer to your exam booklet.

Now let's review the sections of the SDS while looking at a sample SDS for acetone (a product commonly used to remove nail polish). You can find a sample of the Acetone SDS in the training materials file. Take it out and use it to refer to when covering the following sections.

SAFETY DATA SHEET - ACETONE

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

PRODUCT NAME — ACETONE

PRODUCT NO — ACETGEN, ACET005, ACET025, ACET200, ACET205, ACETBUL, ACET38C

SYNONYMS, TRADE NAMES — 2-PROPANONE, DIMETHYL KETONE, KETONE PROPANE, METHYL KETONE, PROPANONE

SUPPLIER

EMERGENCY TELEPHONE

SDS Section 1: Identification

SDS Sections 1 though 8

Sections 1 through 8 contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures. This information should be helpful to those who need to get the information quickly.

Section 1: Identification

The first section of the SDS identifies the chemical as well as the manufacturer or distributor. The information you will find in this section includes:

- The product name used on the label and other means of identification

- Information about the supplier of the chemical, including name, address, and phone number
- An emergency phone number for obtaining information about spills and other accidents 24 hours a day, seven days a week

Properly identifying a product and its recommended uses is an important part of working safely with the chemical. Information about the supplier and an emergency number is critical, especially in the event of an accident involving the product.

On the SDS sample, the product name you are most likely familiar with is acetone, but as you can see, there are many other names for it. The supplier information has been omitted in the sample, but this is where you would find the address and phone numbers on the SDS.

Section 2: Hazard(s) Identification

SDS Section 2: Hazard(s) Identification

The second section of the SDS identifies hazards of the chemical and the warning information associated with those hazards. Hazard classification can include physical hazards such as if the product is flammable, health hazards such as if the product is toxic or cancer-causing, or environmental hazards. Consulting this section helps you understand the risks of the hazards associated with the products used in the salon or shop.

On the sample SDS, notice the term "CLASSIFICATION" underneath the listed hazards. These classifications are risk phrases – basically, a short hand way to list the hazards. For example, F stands for "highly flammable," R36 stands for "irritating to eyes," R66 stands for "repeated exposure may cause skin dryness and cracking," and R67 stands for "vapors may cause drowsiness and dizziness." To view a complete list of risk phrases, go to the training materials file.

When working with chemicals, it is important to know what the hazard icons represent. Let's examine a few icons that you may see on an SDS.

The **Flame** icon is associated with products and chemicals that are flammable or combustible. When you see this icon, you will want to refer to the products label for additional hazardous statements, such as, "Keep away from heat or flames," or "Do not store by sources of high heat." This icon will help you quickly identify potential fire or explosion hazards.

The **Flame Over Circle** icon is specific to solids, liquids, or gases that are classified as oxidizers. Oxidizers are gases that cause materials to burn much more intensely and rapidly than normal. An example would be gasoline on wood.

The **Corrosion** icon refers to chemicals that have a corrosive (damaging) effect on skin and/or membranes.

The **Skull and Crossbones** icon indicates the chemical is highly toxic or fatal if swallowed, inhaled, or absorbed through skin contact.

The **Health Hazard** icon identifies chemicals and products that could lead to chronic or acute health problems.

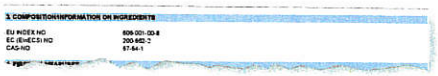
The **Exclamation Mark** icon indicates that while the chemical may potentially harm your health or safety, it represents the lower end of the scale for specific hazards. This would include symptoms such as irritation, dizziness, and allergic reaction.

The **Environment** icon represents that the chemicals/products could be toxic to aquatic life with long-lasting effects. Products with this symbol should not be dumped down drains.

In the training materials file, you will find flash cards to help you learn and remember what these icons represent.

Section 3: Composition/Information on Ingredients

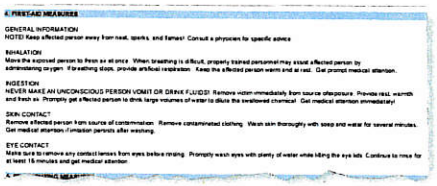
Section 3 contains information regarding the chemical composition and ingredients. This can include the chemical name, Chemical Abstract Service (CAS) number, European Inventory of Existing Commercial Chemical Substances index number (EU Index No), concentration, and other unique identifiers. This information would be helpful if you had to research a specific chemical substance.



SDS Section 3: Composition/Information on Ingredients

Section 4: First-Aid Measures

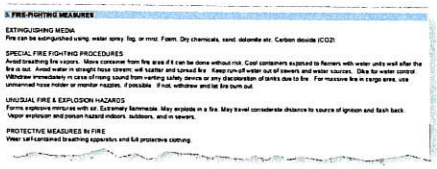
Section 4 should be of particular importance to those working in the shop or salon as it describes the initial care that may be administered. First-aid measures are categorized by the routes of exposure – inhalation, ingestion, and skin and eye contact. You will also find common symptoms, health effects, and whether you should seek immediate medical attention.



SDS Section 4: First-Aid Measures

Section 5: Fire-Fighting Measures

Section 5 provides recommendations for fighting a fire caused by the chemical.



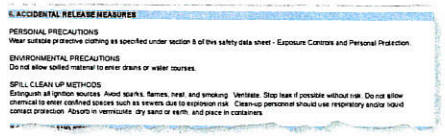
SDS Section 5: Fire-Fighting Measures

Section 6: Accidental Release Measures

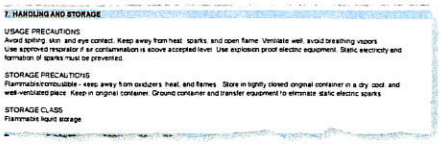
Section 6 recommends the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. For example, it outlines:

- Personal precautions and personal protective equipment
- Environmental precautions
- Spill cleanup methods

Under personal precautions, on the sample Acetone SDS, you see that the SDS is directing you to another section – section 8, which deals with exposure controls and personal protection. The writers of SDSs try to be concise, so they will not always repeat information that can be found in another section.



SDS Section 6: Accidental Release Measures



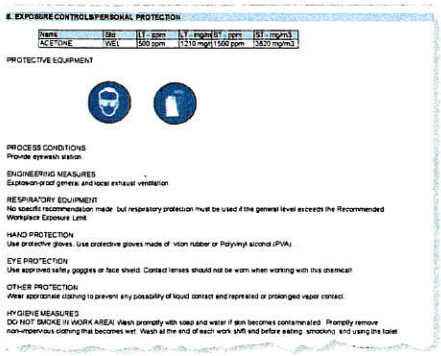
7. HANDLING AND STORAGE

USAGE PRECAUTIONS
Avoid spilling, skin and eye contact. Keep away from heat, sparks, and open flame. Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Use explosion proof electric equipment. Static electricity and formation of sparks must be prevented.

STORAGE PRECAUTIONS
Flammable/combustible - keep away from oxidizers, heat, and flames. Store in tightly closed original container in a dry, cool, and well-ventilated place. Keep in original container. Ground container and transfer equipment to eliminate static electric sparks.

STORAGE CLASS
Flammable liquid storage

SDS Section 7: Handling and Storage



8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	Stds	LT - ppm	LT - mg/m3	ST - ppm	ST - mg/m3
ACETONE	WEL	500 ppm	1210 mg/m3	1500 ppm	3620 mg/m3

PROTECTIVE EQUIPMENT

PROCESS CONDITIONS
Provide eyewash station.

ENGINEERING MEASURES
Explosion-proof general and local exhaust ventilation.

RESPIRATORY EQUIPMENT
No specific recommendation made, but respiratory protection must be used if the general level exceeds the Recommended Workplace Exposure Limit.

HAND PROTECTION
Use protective gloves. Use protective gloves made of: viton rubber or Polyvinyl alcohol (PVA).

EYE PROTECTION
Use approved safety goggles or face shield. Contact lenses should not be worn when working with this chemical!

OTHER PROTECTION
Wear appropriate clothing to prevent any possibility of liquid contact and repreated or prolonged vapor contact.

HYGIENE MEASURES
DO NOT SMOKE IN WORK AREA! Wash promptly with soap and water if skin becomes contaminated. Promptly remove non-impervious clothing that becomes wet. Wash at the end of each work shift and before eating, smoking, and using the toilet.

SDS Section 8: Exposure Controls/Personal Protection

Section 7: Handling and Storage

Section 7 provides guidance on the safe handling practices and conditions for safe storage of chemicals, such as identifying incompatibilities and what substances need to be stored elsewhere.

Section 8: Exposure Controls/Personal Protection

Section 8 is an important section of the SDS as it instructs you on how to minimize harmful exposures through exposure limits, engineering controls, and personal protection. The section details control parameters, such as occupational exposure limit values. For example, here you will find the permissible exposure limit (PEL) and the threshold limit value (TLV). You can also find the appropriate engineering controls such as ventilation and enclosed processes required when working with the substance, replacing a toxic substance with a less hazardous one, or limiting the amount of time a worker is exposed to a hazardous substance. Lastly, Section 8 discusses individual protection measures, such as required personal protective equipment.

The blue icons indicate that safety glasses and gloves should be used when handling acetone. Here are other personal protective equipment icons that you may come across:

Now, let's test your understanding of Sections 1 through 8 of SDSs.

Questions for Review

SDSs should be consulted only after an emergency such as a spill, fire, or explosion. True or False?

Water is the best way to extinguish a fire. True or False?

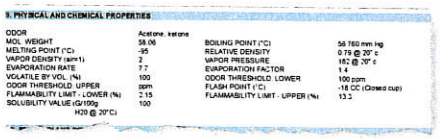
If you see a chemical spill, you should not clean it immediately. True or False?

For answers to all questions, please refer to your exam booklet.

SDS Sections 9 through 11

Sections 9 through 11 and 16 contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information, including the date of preparation or last revision.

Section 9: Physical and Chemical Properties



9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR	Acetone, ketone		
MOL. WEIGHT	58.08	BOILING POINT (°C)	56.760 mm Hg
MELTING POINT (°C)	-95	RELATIVE DENSITY	0.79 @ 20° c
VAPOR DENSITY (air=1)	2	VAPOR PRESSURE	18.2 @ 20° c
EVAPORATION RATE	7.7	EVAPORATION FACTOR	1.4
VOLATILE BY VOL. (%)	100	ODOR THRESHOLD LOWER	100 ppm
ODOR THRESHOLD UPPER	ppm	FLASH POINT (° C)	-18 CC (Closed cup)
FLAMMABILITY LIMIT - LOWER (%)	2.15	FLAMMABILITY LIMIT - UPPER (%)	13.0
SOLUBILITY VALUE (G/100g H20 @ 20°C)	100		

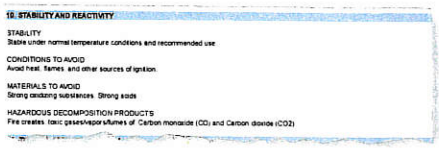
SDS Section 9: Physical and Chemical Properties

Section 9 identifies physical and chemical properties associated with the substance. This can include information such as:

- Appearance – that is, the substance's physical state – solid, liquid, gas, and color
- Odor
- pH, which tells you whether the chemical is an acid or alkaline base;
- Flash point
- Evaporation rate
- Flammability and upper and lower flammability or explosive limits

You may have heard of these terms in your chemistry classes. If you are unfamiliar with some of these terms, it would benefit you to research the meanings.

Section 10: Stability and Reactivity



10. STABILITY AND REACTIVITY

STABILITY
Stable under normal temperature conditions and recommended use

CONDITIONS TO AVOID
Avoid heat, flames and other sources of ignition

MATERIALS TO AVOID
Strong oxidizing substances. Strong acids

HAZARDOUS DECOMPOSITION PRODUCTS
Fire creates toxic gases/vapors/fumes of Carbon monoxide (CO) and Carbon dioxide (CO2)

SDS Section 10: Stability and Reactivity

In Section 10 you can find the substance's stability and reactivity. These are two important things to know. You need to know how a substance might become unstable or react with air, water, or other substances and thus become hazardous to you and your coworkers. In this section, you'll read about:

- The chemical's stability or reactivity
- The possibility of hazardous reactions

- Conditions to avoid such as heat or flames
- Incompatible materials that must be kept away from the substance
- Hazardous decomposition products

Think about the importance of this section. What if you didn't know the conditions under which a substance is stable or unstable? What if you didn't know what might cause a hazardous reaction? You and your coworkers could be in grave danger. On the sample Acetone SDS you see that when working with acetone, you should avoid heat, flames, and other sources of ignition. You may remember this from sections 2 and 7 of the SDS, which stated acetone is flammable.

11. TOXOLOGICAL INFORMATION

TOXIC DOSE 1 - LD 50 9570 mg/kg (oral rat)

INHALATION
Vapors may irritate respiratory system or lungs. Exposure to organic solvent vapors in excess of the stated occupational exposure limit may result in adverse effects such as irritation of the mucous membrane and the respiratory system and adverse effects on kidney, liver, and central nervous system. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness, and in extreme cases, loss of consciousness.

INGESTION
May cause severe internal injury. May cause stomach pain or vomiting.

SKIN CONTACT
Prolonged or repeated skin contact with the product may cause removal of natural fats from the skin, resulting in non-allergic contact and dermatitis and absorption through the skin. Absorption of organic solvents through the skin can cause some of the same acute and chronic effects as inhalation.

EYE CONTACT
Irritating to eyes. Irritating and may cause redness and pain.

HEALTH WARNINGS
Irritant of eyes and mucuous membranes. CNS depressant. Anaesthetic in high concentrations.

ROUTE OF ENTRY
Inhalation. Skin absorption. Ingestion. Skin and/or eye contact.

TARGET ORGANS
Central nervous system. Eyes. Gastro-intestinal tract. Respiratory system. Lungs.

MEDICAL SYMPTOMS
High concentrations of vapors may irritate respiratory system and lead to headache, fatigue, nausea, and vomiting.

MEDICAL CONSIDERATIONS
Convulsive disorders. CNS problems.

SDS Section 11: Toxicological Information

Section 11: Toxicological Information

Section 11 describes the various health effects of the substance as well as the available data used to identify those effects, including:

- Information on the likely routes of exposure – inhalation, ingestion, skin and eye contact
- Symptoms related to the physical, chemical, and toxicological characteristics
- Immediate and delayed health effects and chronic health effects from short- and long-term exposure
- Numerical measures of toxicity
- Whether the chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens or International Agency for Research on Cancer (IARC) Monographs, or by OSHA

If you work with harmful substances, you want to know all there is to know about how and why to avoid exposures. For example, since the sample SDS states prolonged or repeated skin contact with acetone can result in dermatitis, you should minimize exposure as much as possible.

SDS Sections 12 through 15

SDSs must also contain Sections 12 through 15 to be consistent with the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS), but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.

12. ECOLOGICAL INFORMATION

ECOTOXICITY
Not regarded as dangerous for the environment.

SDS Section 12: Ecological Information

Section 12: Ecological Information

Section 12 provides information about how the substance could affect the environment if released.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS
Dispose of waste and residues in accordance with local authority requirements. This material and its container must be disposed of as hazardous waste.

SDS Section 13: Disposal Considerations

Section 13: Disposal Considerations

Section 13 provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. Think about the substances you work with and the proper procedures for disposing of these substances and of any contaminated materials.

On the sample SDS you will notice that acetone and its container must be disposed of as a hazardous waste. It should be taken to a hazardous waste treatment, storage, disposal, or recycling facility. To find a hazardous waste disposal facility in your regional area, visit the Environmental Protection Agency website at **www.epa.gov**.

Section 14: Transport Information

Section 14 explains requirements for the safe transportation of the chemical by road, air, rail, or sea.

Since you are not a manufacturer and will not be transporting chemical products, you will not need to reference this section in detail. In this section of the SDS on the sample SDS you can see acetone is not a marine pollutant, and it is a flammable liquid.

14. TRANSPORT INFORMATION

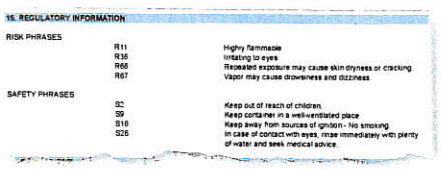
UK ROAD CLASS	3		
PROPER SHIPPING NAME	ACETONE		
UN NO. ROAD	1090	UK ROAD PACK GR	II
ADR CLASS NO	3	ADR CLASS	Class 3 Flammable liquids
ADR PACK GROUP	3(b)	HAZARD No. (ADR)	33
ADR LABEL NO	3	HAZCHEM CODE	2YE
CEFIC TEC(R) NO.	30G30	RID CLASS NO	3
RID PACK GROUP	3(b)	UN NO. SEA	1090
IMDG CLASS	3	IMDG PACK GR	II
EMS	6-Mar	MFAG	See Guide
MARINE POLLUTANT	No	UN NO. AIR	1090
AIR CLASS	3	AIR PACK GR	II

SDS Section 14: Transport Information

As you know by now, acetone is a flammable liquid. The flammable hazard symbol is found in Section 14. Here are other self-explanatory hazard symbols you may come across:

Section 15: Regulatory Information

Section 15 identifies the safety, health, and environmental regulations specific for the product that may not be indicated anywhere else on the SDS. On the sample SDS you can see safety phrases that specifically warn workers to keep out of reach of children. For a full list of safety phrases, see the training materials file.


15. REGULATORY INFORMATION

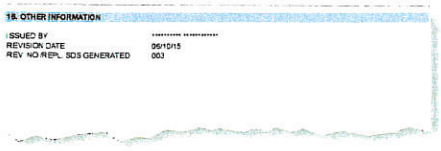
RISK PHRASES

R11	Highly flammable
R36	Irritating to eyes
R66	Repeated exposure may cause skin dryness or cracking
R67	Vapor may cause drowsiness and dizziness

SAFETY PHRASES

S2	Keep out of reach of children.
S9	Keep container in a well-ventilated place
S16	Keep away from sources of ignition - No smoking
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

SDS Section 15: Regulatory Information


16. OTHER INFORMATION

ISSUED BY
REVISION DATE 06/10/15
REV. NO./REPL. SDS GENERATED 003

SDS Section 16: Other Information

SDS Section 16

Section 16: Other Information

Section 16 contains other relevant information, such as when the SDS was prepared, when the last known revision was made, where the changes were made to the previous version, or other useful information that did not fall under the other sections. As you see on the sample SDS, the Acetone SDS was revised on June 10, 2015.

Now that you understand the importance of SDSs and how to read them, let's review everything from today's lesson.

Questions for Review

Which of the following will you find on a SDS?

A) Hazard information

B) Physical properties

C) Handling and storage

D) A) and C)

E) All of the above

The exclamation mark icon indicates:

A) A chemical is combustible under high temperatures

B) A chemical is toxic when swallowed, inhaled, or absorbed through the skin

C) A chemical may cause cancer, target organ toxicity, and aspiration toxicity

D) A chemical may cause irritation, dizziness, or allergic reaction

E) All of the above

If a chemical product is flammable, you should:

A) Smoke near it as long as the lid is on

B) Store it under water to keep it cool

C) Store it away from heat or flames

D) Pour it into a different container

Cal/OSHA requires SDSs to state when the revisions were made. True or False?

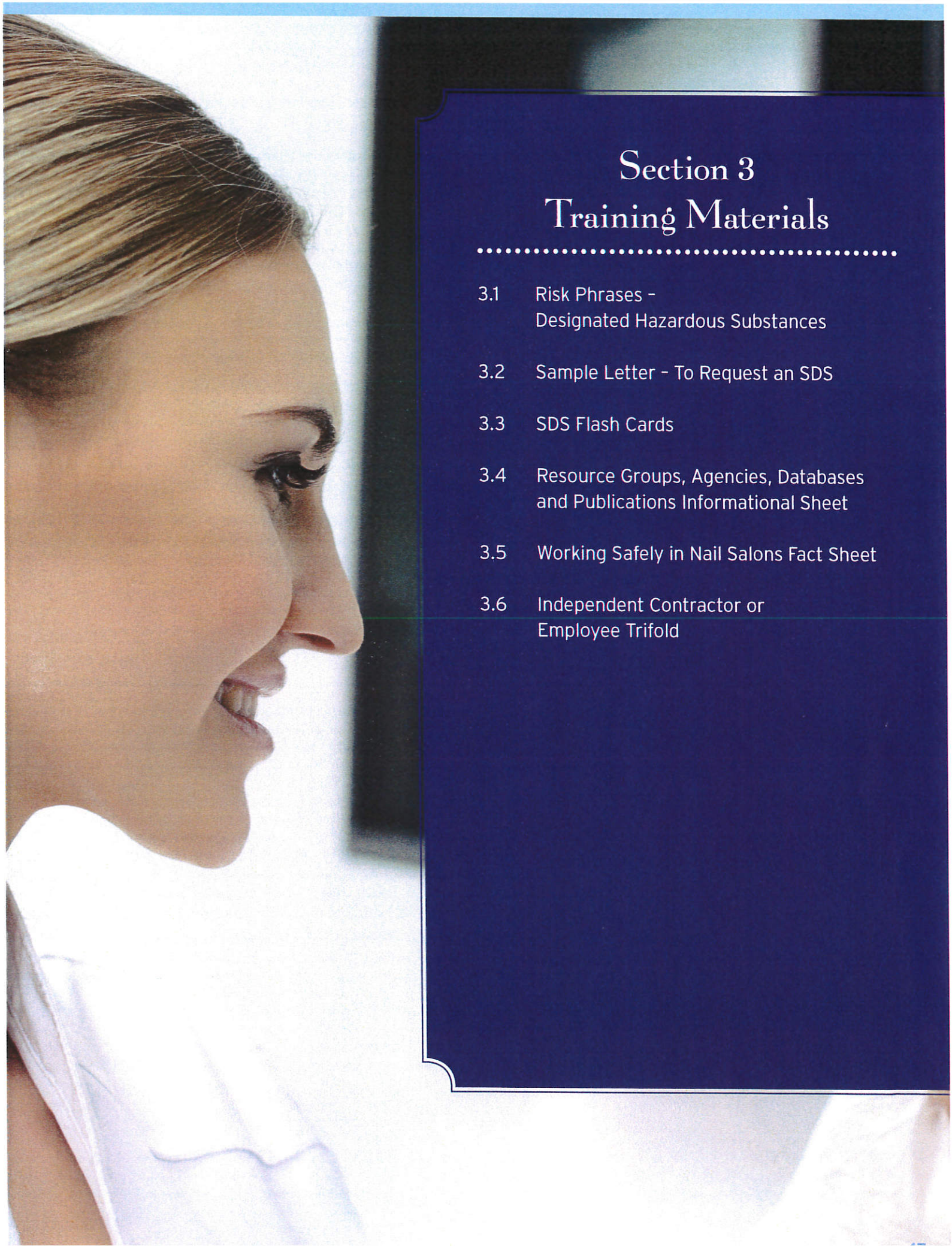
For answers to all questions, please refer to your exam booklet.

In our next lesson, we will consider safety practices, precautions, storage and disposal methods, and cleanup procedures to prevent chemical injuries.

DID YOU KNOW?

Having access to the SDS is your right. It is one gateway to having knowledge on how to protect yourself from chemicals used regularly in the barbering and beauty industry. Although you may use some sections of the SDS more frequently than other sections, it is always valuable to know that you have this information at your fingertips.

Notes



Section 3
Training Materials

3.1 Risk Phrases – Designated Hazardous Substances

3.2 Sample Letter – To Request an SDS

3.3 SDS Flash Cards

3.4 Resource Groups, Agencies, Databases and Publications Informational Sheet

3.5 Working Safely in Nail Salons Fact Sheet

3.6 Independent Contractor or Employee Trifold

SAFETY DATA SHEET - ACETONE

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

PRODUCT NAME	ACETONE
PRODUCT NO.	ACETGEN, ACET005, ACET025, ACET200, ACET205, ACETBUL, ACETSBC
SYNONYMS, TRADE NAMES	2-PROPANONE, DIMETHYL KETONE, KETONE PROPANE, METHL KETONE, PROPANONE
SUPPLIER	xxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxx (***)***-****
EMERGENCY TELEPHONE	* *** *** ****

2. HAZARDS IDENTIFICATION

Irritant

Highly Flammable

Highly flammable. Irritating to eyes. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.

CLASSIFICATION F;R11 Xi; R36 R 66 R67

3. COMPOSITION/INFORMATION ON INGREDIENTS

EU INDEX NO	606-001-00-8
EC (EInECS) NO.	200-662-2
CAS-NO.	67-64-1

4. FIRST-AID MEASURES

GENERAL INFORMATION
NOTE! Keep affected person away from heat, sparks, and flames! Consult a physician for specific advice.

INHALATION
Move the exposed person to fresh air at once. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. If breathing stops, provide artificial respiration. Keep the affected person warm and at rest. Get prompt medical attention.

INGESTION
NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Remove victim immediately from source ofexposure. Provide rest, warmth, and fresh air. Promptly get affected person to drink large volumes of water to dilute the swallowed chemical. Get medical attention immediately!

SKIN CONTACT
Remove affected person from source of contamination. Remove contaminated clothing. Wash skin thoroughly with soap and water for several minutes. Get medical attention if irritation persists after washing.

EYE CONTACT
Make sure to remove any contact lenses from eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes and get medical attention.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA
Fire can be extinguished using: water spray, fog, or mist. Foam. Dry chemicals, sand, dolomite etc. Carbon dioxide (CO_2).

SPECIAL FIRE FIGHTING PROCEDURES
Avoid breathing fire vapors. Move container from fire area if it can be done without risk. Cool containers exposed to flamers with water units well after the fire is out. Avoid water in straight hose stream; will scatter and spread fire. Keep run-off water out of sewers and water sources. Dike for water control. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

UNUSUAL FIRE & EXPLOSION HAZARDS
Forms explosive mixtures with air. Extremely flammable. May explode in a fire. May travel considerate distance to source of ignition and flash back. Vapor explosion and poison hazard indoors, outdoors, and in sewers.

PROTECTIVE MEASURES IN FIRE
Wear self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS
Wear suitable protective clothing as specified under section 8 of this safety data sheet - Exposure Controls and Personal Protection.

ENVIRONMENTAL PRECAUTIONS
Do not allow spilled material to enter drains or water courses.

SPILL CLEAN UP METHODS
Extinguish all ignition sources. Avoid sparks, flames, heat, and smoking. Ventilate. Stop leak if possible without risk. Do not allow chemical to enter confined spaces such as sewers due to explosion risk. Clean-up personnel should use respiratory and/or liquid contact protection. Absorb in vermiculite, dry sand or earth, and place in containers.

7. HANDLING AND STORAGE

USAGE PRECAUTIONS
Avoid spilling, skin, and eye contact. Keep away from heat, sparks, and open flame. Ventilate well, avoid breathing vapors.
Use approved respirator if air contamination is above accepted level. Use explosion proof electric equipment. Static electricity and formation of sparks must be prevented.

STORAGE PRECAUTIONS
Flammable/combustible - keep away from oxidizers, heat, and flames. Store in tightly closed original container in a dry, cool, and well-ventilated place. Keep in original container. Ground container and transfer equipment to eliminate static electric sparks.

STORAGE CLASS
Flammable liquid storage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	Std	LT - ppm	LT - mg/m	ST - ppm	ST - mg/m3
ACETONE	WEL	500 ppm	1210 mg/r	1500 ppm	3820 mg/m3

PROTECTIVE EQUIPMENT

PROCESS CONDITIONS
Provide eyewash station.

ENGINEERING MEASURES
Explosion-proof general and local exhaust ventilation.

RESPIRATORY EQUIPMENT
No specific recommendation made, but respiratory protection must be used if the general level exceeds the Recommended Workplace Exposure Limit.

HAND PROTECTION
Use protective gloves. Use protective gloves made of: viton rubber or Polyvinyl alcohol (PVA).

EYE PROTECTION
Use approved safety goggles or face shield. Contact lenses should not be worn when working with this chemical!

OTHER PROTECTION
Wear appropriate clothing to prevent any possibility of liquid contact and repreated or prolonged vapor contact.

HYGIENE MEASURES
DO NOT SMOKE IN WORK AREA! Wash promptly with soap and water if skin becomes contaminated. Promptly remove non-impervious clothing that becomes wet. Wash at the end of each work shift and before eating, smocking, and using the toilet.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR	Acetone, ketone.		
MOL. WEIGHT	58.06	BOILING POINT (°C)	56 760 mm Hg
MELTING POINT (°C)	-95	RELATIVE DENSITY	0.79 @ 20° c
VAPOR DENSITY (air=1)	2	VAPOR PRESSURE	182 @ 20° c
EVAPORATION RATE	7.7	EVAPORATION FACTOR	1.4
VOLATILE BY VOL. (%)	100	ODOR THRESHOLD, LOWER	100 ppm
ODOR THRESHOLD. UPPER	ppm	FLASH POINT (°C)	-18 CC (Closed cup)
FLAMMABILITY LIMIT - LOWER (%)	2.15	FLAMMABILITY LIMIT - UPPER (%)	13.3
SOLUBILITY VALUE (G/100g H20 @ 20°C)	100		

10. STABILITY AND REACTIVITY

STABILITY
Stable under normal temperature conditions and recommended use.

CONDITIONS TO AVOID
Avoid heat, flames, and other sources of ignition.

MATERIALS TO AVOID
Strong oxidizing substances. Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS
Fire creates: toxic gases/vapors/fumes of: Carbon monoxide (CO) and Carbon dioxide (CO2).

11. TOXOLOGICAL INFORMATION

TOXIC DOSE 1 - LD 50 9570 mg/kg (oral rat)

INHALATION
Vapors may irritate respiratory system or lungs. Exposure to organic solvent vapors in excess of the stated occupational exposure limit may result in adverse effects such as irritation of the mucous membrane and the respiratory system and adverse effects on kidney, liver, and central nervous system. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness, and in extreme cases, loss of conciousness.

INGESTION
May cause severe internal injury. May cause stomach pain or vomiting.

SKIN CONTACT
Prolonged or repeated skin contact with the product may cause removal of natural fats from the skin, resulting in non-allergic contact and dermatitis and absorption through the skin. Absorption of organic solvents through the skin can cause some of the same acute and chronic effects as inhalation.

EYE CONTACT
Irritating to eyes. Irritating and may cause redness and pain.

HEALTH WARNINGS
Irritant of eyes and mucuous membranes. CNS depressant. Anaesthetic in high concentrations.

ROUTE OF ENTRY
Inhalation. Skin absoprtion. Ingestion. Skin and/or eye contact.

TARGET ORGANS
Central nervous system. Eyes. Gastro-intestinal tract. Respiratory system. Lungs.

MEDICAL SYMPTOMS
High concentrations of vapors may irritate respiratory system and lead to headache, fatigue, nausea, and vomiting.

MEDICAL CONSIDERATIONS
Convulsive disorders, CNS problems.

12. ECOLOGICAL INFORMATION

ECOTOXICITY
Not regarded as dangerous for the environment.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS
Dispose of waste and residues in accordance with local authority requirements. This material and its container must be disposed of as hazardous waste.

14. TRANSPORT INFORMATION

UK ROAD CLASS	3		
PROPER SHIPPING NAME	ACETONE		
UN NO. ROAD	1090	UK ROAD PACK GIR	II
ADR CLASS NO.	3	ADR CLASS	Class 3: Flammable liquids
ADR PACK GROUP	3(b)	HAZARD No. (ADR)	33
ADR LABEL NO.	3	HAZCHEM CODE	2YE
CEFIC TEC(R) NO.	30G30	RID CLASS NO.	3
RID PACK GROUP	3(b)	UN NO. SEA	1090
IMDG CLASS	3	IMDG PACK GR.	II
EMS	6-Mar	MFAG	See Guide
MARINE POLLUTANT	No.	UN NO. AIR	1090
AIR CLASS	3	AIR PACK GR.	II

15. REGULATORY INFORMATION

RISK PHRASES

R11	Highly flammable.
R36	Irritating to eyes.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapor may cause drowsiness and dizziness.

SAFETY PHRASES

S2	Keep out of reach of children.
S9	Keep container in a well-ventilated place.
S16	Keep away from sources of ignition - No smoking.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

16. OTHER INFORMATION

ISSUED BY	********** **********
REVISION DATE	06/10/15
REV. NO./REPL. SDS GENERATED	003

RISK PHRASES
DESIGNATED HAZARDOUS SUBSTANCES
NOHSC:10005(1999)

R01	Explosive when dry.
R02	Risk of explosion by shock, friction, fire or other sources of ignition.
R03	Extreme risk of explosion by shock, friction, fire or other sources of ignition.
R04	Forms very sensitive explosive metallic compounds.
R05	Heating may cause an explosion.
R06	Explosive with or without contact with air.
R07	May cause fire.
R08	Contact with combustible material may cause fire.
R09	Explosive when mixed with combustible material.
R10	Flammable.
R11	Highly Flammable.
R12	Extremely Flammable.
R14	Reacts violently with water.
R15	Contact with water liberates extremely flammable gases.
R16	Explosive when mixed with oxidising substances.
R17	Spontaneously flammable in air.
R18	In use may form flammable/explosive vapour air mixture.
R19	May form explosive peroxides.
R20	Harmful by inhalation.
R20/21	Harmful by inhalation and in contact with skin.
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed.
R20/22	Harmful by inhalation and if swallowed.
R21	Harmful in contact with skin.
R21/22	Harmful in contact with skin and if swallowed.
R22	Harmful if swallowed.
R23	Toxic by inhalation.
R23/24	Toxic by inhalation and in contact with skin.
R23/24/25	Toxic by inhalation, in contact with skin and if swallowed.
R23/25	Toxic by inhalation and if swallowed.
R24	Toxic in contact with skin.
R24/25	Toxic in contact with skin and if swallowed.
R25	Toxic if swallowed.
R26	Very toxic by inhalation.
R26/27	Very toxic by inhalation and in contact with skin.
R26/27/28	Very toxic by inhalation, in contact with skin and if swallowed.
R26/28	Very toxic by inhalation and if swallowed.
R27	Very toxic in contact with skin.
R27/28	Very toxic in contact with skin and if swallowed.
R28	Very toxic if swallowed.
R29	Contact with water liberates toxic gas.
R31	Contact with acids liberates toxic gas.
R32	Contact with acids liberates very toxic gas.
R33	Danger of cumulative effects.
R34	Causes burns.
R35	Causes severe burns.
R36	Irritating to eyes.

R36/37	Irritating to eyes and respiratory system.
R36/37/38	Irritating to eyes, respiratory system and skin.
R36/38	Irritating to eyes and skin.
R37	Irritating to respiratory system.
R37/38	irritating to respiratory system and skin.
R38	Irritating to skin.
R39	Danger of very serious irreversible effects.
R39/23	Toxic: danger of very serious irreversible effects through inhalation.
R39/23/24	Toxic: danger of very serious irreversible effects through inhalation and in contact with skin.
R39/23/24/25	Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
R39/23/25	Toxic: danger of very serious irreversible effects through inhalation and if swallowed.
R39/24	Toxic: danger of very serious irreversible effects in contact with skin.
R39/24/25	Toxic: danger of very serious irreversible effects in contact with skin and if swallowed.
R39/25	Toxic: danger of very serious irreversible effects if swallowed.
R39/26	Very toxic: danger of very serious irreversible effects through inhalation.
R39/26/27	Very toxic: danger of very serious irreversible effects through inhalation and in contact with skin.
R39/26/27/28	Very toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
R39/26/28	Very toxic: danger of very serious irreversible effects through inhalation and if swallowed.
R39/27	Very toxic: danger of very serious irreversible effects in contact with skin.
R39/27/28	Very toxic: danger of very serious irreversible effects in contact with skin and if swallowed.
R39/28	Very toxic: danger of very serious irreversible effects if swallowed.
R40	Possible risks of irreversible effects.
R40/20	Harmful: possible risk of irreversible effects through inhalation.
R40/20/21	Harmful: possible risk of irreversible effects through inhalation and in contact with skin.
R40/20/21/22	Harmful: possible risk of irreversible effects through inhalation, in contact with skin and if swallowed.
R40/20/22	Harmful: possible risk of irreversible effects through inhalation and if swallowed.
R40/21	Harmful: possible risk of irreversible effects in contact with skin.
R40/21/22	Harmful: possible risk of irreversible effects in contact with skin and if swallowed.
R40/22	Harmful: possible risk of irreversible effects if swallowed.
R41	Risk of serious damage to eyes.
R42	May cause sensitisation by inhalation.
R42/43	May cause sensitisation by inhalation and skin contact.
R43	May cause sensitisation by skin contact.
R45	May cause cancer.
R46	May cause heritable genetic damage.
R48	Danger of serious damage to health by prolonged exposure.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.

R48/20/21/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R48/20/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R48/20/2l.	Harmful: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin.
R48/21	Harmful: danger of serious damage to health by prolonged exposure in contact with skin.
R48/21/22	Harmful: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.
R48/22	Harmful: danger of serious damage to health by prolonged exposure if swallowed.
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R48/23/24	Toxic: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin.
R48/23/24/25	Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R48/23/25	Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R48/24	Toxic: danger of serious damage to health by prolonged exposure in contact with skin.
R48/24/25	Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.
R48/25	Toxic: danger of serious damage to health by prolonged exposure if swallowed.
R49	May cause cancer by inhalation.
R50:	Very toxic to aquatic organisms.
R51:	Toxic to aquatic organisms.
R52:	Harmful to aquatic organisms.
R53:	May cause long term adverse effects in the aquatic environment.
R54:	Toxic to flora.
R55:	Toxic to fauna.
R56:	Toxic to soil organisms.
R57:	Toxic to bees.
R58:	May cause long term adverse effects in the environment.
R59:	Dangerous for the ozone layer.
R60	May impair fertility
R61	May cause harm to the unborn child.
R62	Possible risk of impaired fertility.
R63	Possible risk of harm to the unborn child.
R64	May cause harm to breastfed babies.
R65	Harmful: May cause lung damage if swallowed.

SAFETY PHRASES
DESIGNED HAZARDOUS SUBSTANCES
NOHSC:10005(1999)

S01	Keep locked up.
S010/2	Keep locked up and out of the reach of children.
S02	Keep out of the reach of children.
S03	Keep in a cool place.
S03/07	Keep container tightly closed in a cool place.
S03/09/14	Keep in a cool well ventilated place away from (incompatible materials to be indicated by manufacturer).
S03/09/14	Keep only in the original container in a cool well ventilated place away from (incompatible materials to be indicated by the manufacturer).
S03/09/49	Keep only in the original container in a cool well ventilated place.
S03/14	Keep in a cool place away from (incompatible materials to be indicated by the manufacturer).
S04	Keep away from living quarters.
S05	Keep contents under (there follows the name of a liquid).
S06	Keep under (there follows the name of an inert gas).
S07	Keep container tightly closed.
S07/47	Keep Container tightly closed and at a temperature not exceeding *C (to be specified by manufacturer).
S07/8	Keep container tightly closed and dry.
S07/9	Keep container tightly closed and in a well ventilated place.
S08	Keep container dry.
S09	Keep container in a well-ventilated place.
S12	Do not keep the container sealed.
S13	Keep away from food, drink and animal foodstuffs.
S14	Keep away from (a list of incompatible materials will follow).
S15	Keep away from heat.
S16	Keep away from sources of ignition.
S17	Keep away from combustible material.
S18	Handle and open container with care.
S20	When using, do not eat or drink.
S20/21	When using do not eat, drink or smoke.
S21	When using do not smoke.
S22	Do not breathe dust.
S23	Do not breathe vapour.
S24	Avoid contact with skin.
S24/25	Avoid contact with skin and eyes.
S25	Avoid contact with eyes.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S27	Take off immediately all contaminated clothing.
S28	After contact with skin, wash immediately with plenty of soap-suds.
S29	Do not empty into drains.
S29/56	Do not empty into drains, dispose of this material and its container to hazardous or special waste collection point.
S30	Never add water to this product.
S33	Take precautionary measures against static discharges.

S35	This material and its container must be disposed of in a safe way.
S36	Wear suitable protective clothing.
S36/37	Wear suitable protective clothing and gloves.
S36/37/39	Wear suitable protective clothing, gloves and eye / face protection.
S36/39	Wear suitable protective clothing and eye/face protection.
S37	Wear suitable gloves.
S37/39	Wear suitable gloves and eye/face protection.
S38	In case of insufficient ventilation, Wear suitable respiratory equipment.
S39	Wear eye / face protection.
S40	To clean the floor and all objects contaminated by this material, use – (there follows suitable cleaning material).
S41	In case of fire and / or explosion do not breathe fumes.
S42	During fumigation / spraying wear suitable respiratory equipment.
S43	In case of fire use (there follows the type of fire fighting equipment to be used.)
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.).
S46	If swallowed, seek medical advice immediately and show this container or label.
S47	Keep at temperature not exceeding.
S47/49	Keep only in the original container at temperature not exceeding *C (to be specified by manufacturer).
S48	To be kept wet with (there follows a material name).
S49	Keep only in the original container.
S50	Do not mix with.
S51	Use only in well ventilated areas.
S52	Not recommended for interior use on large surface areas.
S53	Avoid exposure - obtain special instructions before use.
S56	Dispose of this material and its container at hazardous or special waste collection point.
S57	Use appropriate container to avoid environmental contamination.
S59	Refer to manufacturer / supplier for information on recovery recycling.
S60	This material and its container must be disposed of as hazardous waste.
S61	Avoid release to the environment. Refer to special instructions/safety data sheets.
S62	If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.

Sample Letter For Requesting Safety Data Sheets

Date
Manufacturer
Address

Attention: SDS Request

Dear Sir/Madam,

The Cal/OSHA Hazard Communication Standard (Section 5194 of the General Industry Safety Orders of Title 8 of the California Administrative Code) requires employers to have in their possession up-to-date Safety Data Sheets (SDSs) for all hazardous substances used in their workplaces. In general, an SDS should list the hazardous ingredients of a product, describe its heath and safety hazards, and suggest ways to use the product safely. It should also contain information about any fire and explosion hazards, first aid, and procedures for cleaning up leaks and spills.

The State requires manufacturers of hazardous substances to prepare and provide SDSs to their purchasers, either directly or through their suppliers (California Labor Code Division 5, Chapter 2.5, Section 6390).

Accordingly, we request that you either provide us with the current SDSs for each product that we purchase from your company (see attached list), or provide us with a statement explaining why a product is exempt from these regulations. Also, please certify that your SDS meets the requirements of GISO Section 5194.

Sincerely,

Purchaser's Name
Title
Address

Safety Icons Flash Cards

Cut out these flash cards and use them to help you memorize the different symbols you might see on a typical Safety Data Sheet.

INSTRUCTIONS: Cut on red dotted lines and fold in half to create flash cards.

Cut here

Cut here

BarberCosmo

This icon is associated with products and chemicals that are flammable or combustible.

www.barbercosmo.ca.gov

BarberCosmo

This icon is specific to solids, liquids, or gases that are classified as oxidizers.

www.barbercosmo.ca.gov

BarberCosmo

This icon refers to chemicals that have a corrosive effect on skin and/or membranes.

www.barbercosmo.ca.gov

Safety Icons Flash Cards

Cut out these flash cards and use them to help you memorize the different symbols you might see on a typical Safety Data Sheet.

INSTRUCTIONS: Cut on red dotted lines and fold in half to create flash cards.

Cut here

Cut here

BarberCosmo

This icon identifies chemicals and products that could lead to acute health problems.

www.barbercosmo.ca.gov

BarberCosmo

This icon identifies potentially fatal toxicity hazards.

www.barbercosmo.ca.gov

BarberCosmo

This icon identifies products with compressed gases, dissolved gases, liquefied gases, and refrigerated gases.

www.barbercosmo.ca.gov

Safety Icons Flash Cards

Cut out these flash cards and use them to help you memorize the different symbols you might see on a typical Safety Data Sheet.

INSTRUCTIONS: Cut on red dotted lines and fold in half to create flash cards.

Cut here

Cut here

BarberCosmo

This icon indicates that the product contains an explosive substance or mixture that can cause damage to the surroundings.

www.barbercosmo.ca.gov

BarberCosmo

This icon indicates that this product/chemical represents the lower end of the danger scale for specific hazards when compared to products bearing some of the other icons.

www.barbercosmo.ca.gov

BarberCosmo

This icon represents the chemicals/products could be hazardous to aquatic life.

www.barbercosmo.ca.gov

Resource Groups, Agencies, Databases, and Publications

California Division of Occupational Safety and Health (Cal/OSHA)

Cal/OSHA is a State agency that enforces health and safety regulations, inspects workplaces, and offers free publications on various hazards, including chemicals. Cal/OSHA will also assist you if you cannot get a Safety Data Sheet (SDS) from a chemical manufacturer or distributor. There are many Cal/OSHA offices throughout the State.

REGIONAL OFFICES (Contact to File a Complaint)

Call the regional office closest to you when you need to file a complaint regarding a violation of Cal/OSHA law.

San Francisco District Office
Carlton Jones, District Manager
455 Golden Gate Ave., Room 9516
San Francisco, CA 94102
Phone: (415) 557-0100
Fax: (415) 557-0123
E-mail: DOSHSF@dir.ca.gov

Fremont District Office
Eddie Miranda, District Manager
39141 Civic Center Dr., Suite 310
Fremont, CA 94538
Phone: (510) 794-2521
Fax: (510) 794-3889
E-mail: DOSHFremont@dir.ca.gov

Foster City District Office
Barbara Kim, District Manager
1065 East Hillsdale Blvd., Suite 110
Foster City, CA 94404
Phone: (650) 573-3812
Fax: (650) 573-3817
E-mail: DOSHFC@dir.ca.gov

Oakland District Office
David Hornung, District Manager
1515 Clay Street, Suite 1303
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Phone: (510) 622-2916
Fax: (510) 622-2908
E-mail: DOSHOAK@dir.ca.gov

American Canyon District Office
Kathy Lynn Garner, District Manager
3419 Broadway Street, Suite H8
American Canyon, CA 94503
Phone: (707) 649-3700
Fax: (707) 649-3712
E-mail: DIRDOSHAmericanCanyon@dir.ca.gov

Sacramento District Office
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2424 Arden Way, Suite 165
Sacramento, CA 95825
Phone: (916) 263-2800
Fax: (916) 263-2798
E-mail: DOSHSAC@dir.ca.gov

Modesto District Office
VACANT, District Manager
4206 Technology Drive, Suite 3
Modesto, CA 95356
Phone: (209) 545-7310
Fax: (209) 545-7313
E-mail:DOSHMOD@dir.ca.gov

Fresno District Office
Jerry Walker, District Manager
2550 Mariposa Street, Room 4000
Fresno, CA 93721
Phone: (559) 445-5302
Fax: (559) 445-5786
E-mail: DOSHFRE@dir.ca.gov

REGIONAL OFFICES continued

Redding District Office
John Wendland, District Manager
381 Hemsted Drive
Redding, CA 96002
Phone: (530) 224-4743
Fax: (530) 224-4747
E-mail: DOSHRED@dir.ca.gov

Santa Ana District Office
Richard Fazlollahi, District Manager
2000 E. McFadden Ave., Suite 122
Santa Ana, CA 92705
Phone: (714) 558-4451
Fax: (714) 558-2035
E-mail: DOSHSA@dir.ca.gov

San Diego District Office
Kathy Derham, District Manager
7575 Metropolitan Dr., Suite 207
San Diego, CA 92108
Phone: (619) 767-2280
Fax: (619) 767-2299
E-mail: DOSHSD@dir.ca.gov

San Bernardino District Office
Ayman Shiblak, District Manager
464 W. 4th Street, Suite 332
San Bernardino, CA 92401
Phone: (909) 383-4321
Fax: (909) 383-6789
E-mail: DOSHSB@dir.ca.gov

CAL/OSHA CONSULTATION OFFICES (Salon Owners)

Offers advice to salon owners on correcting health and safety hazards.

San Francisco Bay Area
1515 Clay Street, Suite 1103
Oakland, CA 94612
(510) 622-2891

Northern California
2424 Arden Way, Suite 410
Sacramento, CA 95825
(916) 263-0704

Central Valley
1901 North Gateway Blvd., Suite 102
Fresno, CA 93727
(559) 454-1295

San Fernando Valley
6150 Van Nuys Blvd., Suite 307
Van Nuys, CA 91401
(818) 901-5754

Los Angeles, Orange
1 Centerpointe Drive, Suite 150
La Palma, CA 90623
(714) 562-5525

San Bernardino
464 W. 4th Street, Suite 339
San Bernardino, CA 92401
(909) 383-4567

San Diego
7575 Metropolitan Drive, Suite 204
San Diego, CA 92108
(619) 767-2060

OSHA Occupational Chemical Database

OSHA maintains a chemical database as a convenient reference for the occupational safety and health community. It compiles information from several government agencies and organizations. Information available in the report includes:

- Physical properties
- Exposure guidelines
- NIOSH Pocket Guide
- Emergency response information, including the DOT Emergency Response Guide.

Database: **www.osha.gov/chemicaldata/**

California Department of Public Health (CDPH)

The California Department of Public Health is dedicated to optimizing the health and well-being of the people in California.

Occupational Health Branch (Headquarters for HESIS, OHSEP and CSCP)
California Department of Public Health
850 Marina Bay Parkway, Building P, 3rd Floor
Richmond, CA 94804
Phone: (510) 620-5757
Fax: (510) 620-5743
Website: **www.cdph.ca.gov**
E-mail: occhealth@cdph.ca.gov

The CDPH offers the following programs:

- **Hazard Evaluation System and Information Service (HESIS)**
  HESIS is a program that uses scientific, medical and public health expertise to help prevent workplace illness and disease. The program provides information to employers and employees on the health effects of toxic substances, and precautions for their safe use.

  Website: **www.cdph.ca.gov/programs/hesis**
  Workplace Hazard Helpline: (866) 282-5516
  Free publications on workplace hazards:
  (866) 627-1586

- **Occupational Health and Surveillance and Evaluation Program (OHSEP)**
  OHSEP is a program that tracks work-related injuries and diseases, conducts workplace studies about occupational exposures and health effects, and makes prevention recommendations to employers and employees. Information from OHSEP can be used to improve required workplace Injury and Illness prevention programs (IIPP) and assist health care providers in early identification and treatment of work-related injuries and disease.

  Website: **www.cdph.ca.gov/programs/ohsep**

- **California Safe Cosmetics Program (CSCP)**
  The primary purpose of the California Safe Cosmetics Program (CSCP) is to collect information on hazardous and potentially hazardous ingredients in cosmetic products sold in California and to make this information available to the public.

  Website: **www.cdph.ca.gov/programs/cosmetics**
  E-mail: cosmetic@cdph.ca.gov

Center for Occupational and Environmental Health (COEH)

A University of California program. Conducts research on occupational illnesses and inures; offers degree programs and continuing education courses related to health and safety.

Center for Occupational & Environmental Health
50 University Hall #7360
University of California, Berkeley
Berkeley, CA 94720-7360

Website: **http://coeh.berkeley.edu**
Administrator contact information:
http://coeh.berkeley.edu/people/admin.htm

Labor Occupational Health Program (LOHP)

The LOHP is part of the University of California, Berkeley. It offers information and advice on chemicals and other workplace hazards.

University of California
2223 Fulton St, 4th Floor
Berkeley, CA 94720-5120
Phone: (510) 642-5507
Fax: (510) 643-5698
Website: **www.lohp.org**
E-mail: lohp@berkeley.edu

UCLA Labor Occupational Safety and Health Program (LOSH)

LOSH is part of the University of California, Los Angeles. It is a nationally recognized center promoting safe workplaces through teaching and education, research, and policy advocacy.

UCLA-LOSH
10945 Le Conte Ave., Suite 2107
Box 951478
Los Angeles, CA 90095-1478
Phone: (310) 794-5964
Fax: (310) 794-6403
Website: **www.losh.ucla.edu**

National Institute for Occupational Safety and Health (NIOSH)

NIOSH is a federal agency that offers free publications and an online database of chemicals. It provides information on chemicals and other workplace hazards. In some cases, NIOSH will send investigators to your workplace to evaluate health hazards.

NIOSH
4676 Columbia Parkway
Cincinnati, OH 45226-1996
Phone: (800) 356-4674
Fax: (513) 533-8573
Website: **www.cdc.gov/niosh**
E-mail: pubstaft@cdc.gov

Right to Know Substance List

The Right to Know Substance List contains over 2,000 hazardous substances, including those on the Special Health Hazard Substance List (SHHSL). The SHHSL consists of over 1,000 hazardous substances that are defined as carcinogens, mutagens, teratogens, corrosive, flammables, and reactives.

Website: **http://web.doh.state.nj.us/rtkhsfs/rtkhsl.aspx**
E-mail: rtk@doh.state.nj.us
Phone: (609) 984-2202
Fax: (609) 984-7407

Provided by: Department of Health
P. O. Box 360
Trenton, NJ 08625-0360
Website: **http://nj.gov/health/ohs**

Toxnet

An online resource for searching databases on toxicology, hazardous chemicals, environmental health, and toxic releases. It is managed by the Toxicology and Environmental Health Information Program (TEHIP) in the Division of Specialized Information Services (SIS) of the National Library of Medicine (NLM).

Website: **http://toxnet.nlm.nih.gov**

NIOSH Pocket Guide to Chemical Hazards

The NIOSH Pocket Guide to Chemical Hazards is intended as a source of general industrial hygiene information for workers, employers, and occupational health professionals.

Website: **www.cdc.gov/niosh/npg/pgintrod.html**

Cosmetics Info Website

Cosmeticsinfo.org is your source for information on cosmetics and personal care products—how they work, their safety, and the science behind their ingredients. Maintained by expert scientists.

Website: **www.cosmeticsinfo.org**

Safety Data Sheet Collection

There are several free online SDS databases. For your convenience, Oklahoma State University has compiled the following list:

Website: **https://ehs.okstate.edu/links/msds.htm**

Publications

A Consumer's Dictionary of Cosmetic Ingredients. 7th edition.

Ruth Winter. New York, Crown Publishers, 2009

Helpful Websites

State Site
www.info.ca.gov

California Department of Public Health
www.cdph.ca.gov/Pages/DEFAULT.aspx

Department of Industrial Relations
www.dir.ca.gov/dosh

United States Department of Labor
www.osha.gov/dts/sltc

Chemical Hazard and Alternatives Toolbox
www.chemhat.org

Safety & Health Fact Sheet

Cal/OSHA Consultation Services
Division of Occupational Safety and Health

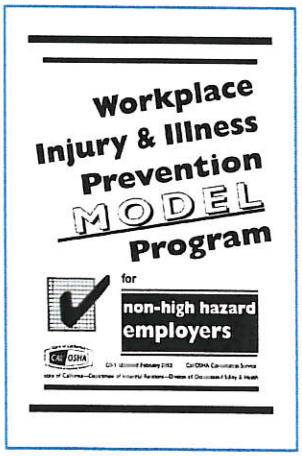
Working Safely in Nail Salons

All employers in California, including nail salons, are responsible for providing a safe and healthy work environment for their employees. This fact sheet provides information on:

- Requirements to develop and implement an Injury & Illness Prevention Program (IIPP).
- Common topics and resources for nail salons.

Developing and Implementing IIPP

Employers must develop and implement a comprehensive Injury and Illness Prevention Program that includes eight (8) required elements. The program must be in writing.



Cal/OSHA has provided a model program and a guide that can be used by nail salon employers to develop their own written IIPP.

The model program and guide are available online:
www.dir.ca.gov/dosh/dosh_publications/iipnonhigh.html
www.dir.ca.gov/dosh/dosh_publications/iipp.pdf

What are the Eight Elements of an IIPP?

1. Identification of the person responsible for implementing the program.
2. A system for effectively communicating with employees about health and safety matters.
3. A system for ensuring that employees comply with safe and healthy work practices. This should include providing positive reinforcement for employees who follow the rules and appropriate action for employees who violate the rules.
4. Procedures for conducting workplace inspections. The written IIPP should explain how often inspections are conducted and who does the inspections.
5. Methods for correcting unsafe conditions quickly.
6. A procedure for conducting an investigation if an employee is injured on the job or has an occupational illness.
7. Training and instruction for employees. Some of the topics and hazards most commonly found in nail salons are listed below under "Common Topics and References."
8. Records of employee training and workplace inspections. These records should be on file and available for review.

Common Topics and References

(Only selected information is provided. Listing is not comprehensive)

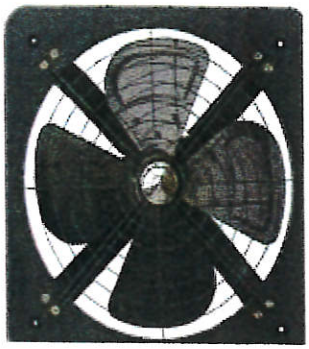
Work Safely with Chemicals

- Choose safer products
- Read labels
- Read Safety Data Sheet
- Evaluate & identify hazards
- Use gloves & other equipment
- Use eye wash as needed
- Follow emergency procedures
- Dispose of leftover chemicals properly

Helpful Resources:

T8CCR for HAZCOM: http://www.dir.ca.gov/title8/5194.html
OSHA's Nail Salon site: https://www.osha.gov/SLTC/nailsalons/
Board of Barbering and Cosmetology (BBC): www.barbercosmo.ca.gov
DTSC site: www.dtsc.ca.gov/InformationResources/DTSC_Overview.cfm
NIOSH Guide for Chemical Hazard: www.cdc.gov/niosh/docs/99-112/
CDPH –artificial nail: www.cdph.ca.gov/programs/hesis/documents/artnails.pdf
EPA site: www.epa.gov/dfe/pubs/projects/salon/nailsalonguide.pdf
HESIS booklet:
www.cdph.ca.gov/programs/hesis/Documents/introtoxsubstances.pdf
CA Safe Cosmetics Program Product Database:
https://safecosmetics.cdph.ca.gov/search/

Provide Ventilation to Bring In Fresh Air



- Open doors & windows when needed
- Turn on fans
- Maintain ceiling vents
- Use ventilated stations
- Run A/C to bring in new air
- No smoking
- Keep nail salon's exhaust system on

Helpful Resources:

Massachusetts publication: www.mass.gov/lwd/docs/dos/mwshp/hib418.pdf
Board of Barbering and Cosmetology: www.barbercosmo.ca.gov
Nails Magazine - Ventilation: www.nailsmag.com/list/topic/ventilation
NIOSH site: www.cdc.gov/niosh/topics/manicure/
T8CCR Permissible Exposure Limit: www.dir.ca.gov/title8/5155.html

Avoid Pain and Improve Ergonomics

- Provide and use proper lighting
- Eliminate awkward body postures and hand postures
- Take frequent breaks
- Provide and receive training
- Use ergonomic tools
- Avoid excessive repetitive motions

Helpful Resources:

Cal/OSHA's Easy Ergo: www.dir.ca.gov/dosh/dosh_publications/EasErg2.pdf
OSHA's Nail Salon Ergo: www.osha.gov/SLTC/nailsalons/musclestrains.html
PBA site: www.probeauty.org/docs/nmc/Ergonomic_Basics-10-9-2012.pdf
Nails Magazine -Ergonomics: www.nailsmag.com/list/topic/ergonomics

Prevent Heat Illness

- Watch for symptoms
- Drink water frequently
- Use air conditioning
- Provide and receive training
- Use rest periods
- Watch one another
- Know your emergency response plan

Helpful Resources:

Cal/OSHA eTool: www.dir.ca.gov/dosh/etools/08-006/index.htm
Cal/OSHA Heat Illness site: www.dir.ca.gov/DOSH/HeatIllnessInfo.html
Employer Training Kit: www.99calor.org/for-employers/index.html
National Weather Service: www.weather.gov/
T8CCR for Heat Illness: www.dir.ca.gov/title8/3395.html

Prevent Exposure to Infectious Diseases

- Use disinfectants
- Know how diseases spread
- Provide and receive training
- Be aware of HIV, HEP-B, HEP-C
- Use PPE (Personal Protective Equipment) and maintain good sanitation
- Dispose of biohazard waste properly

Helpful Resources:

OSHA site: www.osha.gov/SLTC/nailsalons/biohazards.html
EPA site: www.epa.gov/dfe/pubs/projects/salon/nailsalonguide.pdf
BBC site: www.barbercosmo.ca.gov/enforcement/disinfection.shtml
Asian Law Caucus: nailsalonalliance.org/storage/ALC%20factsheet.pdf
Nevada SBC site: cosmetology.nv.gov/Consumers/Nail_Salon_Guide/
T8CCR for BBP: www.dir.ca.gov/title8/5193.html

Prevent Electrical and Other Safety Hazards

- Water & electricity don't mix
- No exposed live parts
- No overloading of outlets
- No damaged extension cords
- Use ground fault circuit interrupter in wet areas
- No slippery floors; no tripping hazards
- Maintain fire extinguishers & first-aid kits
- Provide and receive training

Helpful Resources:

Cal/OSHA Guide: www.dir.ca.gov/dosh/dosh_publications/Electrical_Safety.pdf
BBC site: www.barbercosmo.ca.gov/laws_regs/regulations.shtml
T8CCR for Fire Extinguisher: www.dir.ca.gov/title8/6151.html
T8CCR for First Aid: www.dir.ca.gov/title8/3400.html
T8CCR for GFCI: www.dir.ca.gov/title8/2300.html

Prevent Workplace Violence

- Know your site security
- Understand posted signs
- Provide and receive training
- Talk with law enforcement
- Use secure cash management
- Minimize cash transactions
- Post emergency phone numbers
- Be aware of foot traffic entering through front and back doors

Helpful Resources:

Model IIPP: www.dir.ca.gov/dosh/dosh_publications/iipsecurity.pdf
CalOSHA Guidelines: www.dir.ca.gov/dosh/dosh_publications/worksecurity.html
Board of Barbering and Cosmetology: www.barbercosmo.ca.gov
NHNBS Alliance: nailsalonalliance.org/
OSHA site: www.osha.gov/SLTC/nailsalons/

Contacting Cal/OSHA Consultation Services

Publications: www.dir.ca.gov/dosh/PubOrder.asp

Consultation Programs:
www.dir.ca.gov/dosh/consultation.html

Toll-free Number: **1-800-963-9424**

On-Site Assistance Program Area Offices:

Central Valley: 559-454-1295 San Diego / Imperial: 619-767-2060
No. California: 916-263-0704 San Bernardino: 909-383-4567
SF / Bay Area: 510-622-2891 San Fernando Valley: 818-901-5754
La Palma / LA / Orange: 714-562-5525

This document is not meant to be either a substitute for or a legal interpretation of the occupational safety and health regulations. Readers shall refer directly to Title 8 of the California Code of Regulations and the Labor Code for detailed information regarding the regulation's scope, specifications, and exceptions and for other requirements that may be applicable to their operations.

California Department of Industrial Relations

CONSULTATION STATE OF CALIFORNIA CAL OSHA DEPARTMENT OF INDUSTRIAL RELATIONS SERVICES

SEP 2014

IRS Tax Publications

If you are not sure whether you are an employee or an independent contractor, get Form SS-8, Determination of Worker Status for Purposes of Federal Employment Taxes and Income Tax Withholding. Publication 15-A, Employer's Supplemental Tax Guide, provides additional information on independent contractor status.

IRS Electronic Services

You can download and print IRS publications, forms, and other tax information materials on the Internet at www.irs.gov. You can also call the IRS at 1-800-829-3676 (1-800-TAX-FORM) to order free tax publications and forms.

Publication 1796, 2007 IRS Tax Products CD (Final Release), containing current and prior year tax publications and forms, can be purchased from the National Technical Information Service (NTIS). You can order Publication 1796 toll-free by calling 1-877-233-6767 or via the Internet at www.irs.gov/cdorders.

Call 1-800-829-4933, the Business and Speciality Tax Line, if you have questions related to employment tax issues.

IRS

INDEPENDENT CONTRACTOR

OR

EMPLOYEE

Publication 1779 (Rev. 3-2012) Catalog Number 16134L
Department of the Treasury **Internal Revenue Service** www.irs.gov

Independent Contractor *or* Employee

Which are you?

For federal tax purposes, this is an important distinction. Worker classification affects how you pay your federal income tax, social security and Medicare taxes, and how you file your tax return. Classification affects your eligibility for social security and Medicare benefits, employer provided benefits and your tax responsibilities. If you aren't sure of your work status, you should find out now. This brochure can help you.

The courts have considered many facts in deciding whether a worker is an independent contractor or an employee. These relevant facts fall into three main categories: behavioral control; financial control; and relationship of the parties. In each case, it is very important to consider all the facts – no single fact provides the answer. Carefully review the following definitions.

Behavioral Control

These facts show whether there is a right to direct or control how the worker does the work. A worker is an employee when the business has the right to direct and control the worker. The business does not have to actually direct or control the way the work is done – as long as the employer has the right to direct and control the work. For example:

Instructions – if you receive extensive instructions on how work is to be done, this suggests that you are an employee. Instructions can cover a wide range of topics, for example:

- how, when, or where to do the work
- what tools or equipment to use
- what assistants to hire to help with the work
- where to purchase supplies and services

If you receive less extensive instructions about what should be done, but not how it should be done, you may be an independent contractor. For instance, instructions about time and place may be less important than directions on how the work is performed.

Training – if the business provides you with training about required procedures and methods, this indicates that the business wants the work done in a certain way, and this suggests that you may be an employee.

Financial Control

These facts show whether there is a right to direct or control the business part of the work. For example:

Significant Investment – if you have a significant investment in your work, you may be an independent contractor. While there is no precise dollar test, the investment must have substance. However, a significant investment is not necessary to be an independent contractor.

Expenses – if you are not reimbursed for some or all business expenses, then you may be an independent contractor, especially if your unreimbursed business expenses are high.

Opportunity for Profit or Loss – if you can realize a profit or incur a loss, this suggests that you are in business for yourself and that you may be an independent contractor.

Relationship of the Parties

These are facts that illustrate how the business and the worker perceive their relationship. For example:

Employee Benefits – if you receive benefits, such as insurance, pension, or paid leave, this is an indication that you may be an employee. If you do not receive benefits, however, you could be either an employee or an independent contractor.

Written Contracts – a written contract may show what both you and the business intend. This may be very significant if it is difficult, if not impossible, to determine status based on other facts.

When You Are an Employee...

- Your employer must withhold income tax and your portion of social security and Medicare taxes. Also, your employer is responsible for paying social security, Medicare, and unemployment (FUTA) taxes on your wages. Your employer must give you a Form W-2, Wage and Tax Statement, showing the amount of taxes withheld from your pay.
- You may deduct unreimbursed employee business expenses on Schedule A of your income tax return, but only if you itemize deductions and they total more than two percent of your adjusted gross income.

When You Are an Independent Contractor...

- The business may be required to give you Form 1099-MISC, Miscellaneous Income, to report what it has paid to you.
- You are responsible for paying your own income tax and self-employment tax (Self-Employment Contributions Act – SECA). The business does not withhold taxes from your pay. You may need to make estimated tax payments during the year to cover your tax liabilities.
- You may deduct business expenses on Schedule C of your income tax return.

Acknowledgements

The Board of Barbering and Cosmetology would like acknowledge the work and dedication of the original authors and contributors of the "Health and Safety for Hair Care Professionals" curriculum. Without their dedication and effort on the original curriculum, the publication presented today would not have taken place.

The Board of Barbering and Cosmetology would also like to thank the following individuals who gave so generously of their time to help us develop, pilot test, edit and reinvent this curriculum:

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(800) 952-5210
www.barbercosmo.ca.gov

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Safety Data Sheet

A QUICK LOOK

A Safety Data Sheet (SDS) is a bulletin that gives useful information about a chemical product and the possible harmful affects you may experience if exposed to the chemical. It is required by law that a chemical manufacturer, distributor and/or importer provide you with an SDS, upon your request.

Since you work with chemicals every day, you will want to become familiar with the SDS. The Board recommends you pay special attention to the following sections as these sections in particular will assist you in protecting both your health and the health of your clients.

Important Sections of the SDS

Section 1 – Identification
Identifies the chemical and the manufacturer or distributor. The information you will find in this section includes:

- The product name used on the label;
- Information about the supplier of the chemical, including name, address, and phone number; *and*
- An emergency phone number for obtaining information about spills and other accidents 24 hours a day, 7 days a week.

Section 7 – Handling and Storage
Provides guidance on how to safely handle and store the chemical.

Section 8 – Exposure Controls / Personal Protection
Offers suggestions on how to minimize harmful exposures and what equipment to use to protect yourself.

Section 11 – Toxicological Information
Describes symptoms and health effects that may be experienced if you are exposed to the chemical and how the chemical may get into your body.

Let's work together for a safe, healthy, salon experience.

Ensuring the health and safety of California consumers by promoting ethical standards and by enforcing the laws of the barbering and beauty industry.

BarberCosmo

For questions, comments or complaints contact the Board.

Board of Barbering and Cosmetology
2420 Del Paso Road, Suite 100
Sacramento, CA 95834
Phone: 800-952-5210 Fax: 916-575-7281
www.barbercosmo.ca.gov

Agenda Item 4

Board of Barbering and Cosmetology
PO Box 944226, Sacramento, CA 94244
P (800) 952-7574 F (916) 574-7574 | www.barbercosmo.ca.gov

MEMORANDUM

TO: Members
Board of Barbering and Cosmetology

Date: July 13, 2016

FROM: Tami Guess, Board Project Manager
Board of Barbering and Cosmetology

SUBJECT: Safer Products and Practices for Disinfection / Water Usage

On June 2, 2016, the Health and Safety Advisory Committee requested Board staff to research and report on the availability of safer disinfectants that could be used and if there were options for less water usage in Board licensed establishments.

It was presumed that the word 'safer' was to be used in the general context of safer to the client and technician's health along with being environmentally friendly.

The primary liquid disinfection used by Board licensees is Quaternary Ammonium (Quats/Barbicide). Environmental scientists are expressing concern with the use of quats. Quats have the ability to stick onto surfaces which makes them effective disinfectants but also creates concern about their ability to accumulate in the environment. (Marty Mulvihill, director of the University of California, Berkeley's Center for Green Chemistry).

In addition to environmental concerns, the repetitive use of quats can present the following health risks: Asthma, skin sensitization and possible reproductive and developmental toxicity.

It is estimated that over 85,000 commercial chemicals have been developed within the last 60 years. When performing health testing it is normal protocol to evaluate a single chemical at a time, to observe possible health risks. Board licensees face elevated health risks as they are not just exposed to quats (vapor inhalation) but also the *combined* chemical exposure that licensees face on a daily basis. (hair products, nail products, esthetic products, cleaning chemicals, etc.) The Board has taken measure to help reduce the chemical exposure to quats by promulgating California Code of Regulation (CCR) §979 (1)(5) which became effective July 1, 2016:

979. Disinfecting Non-Electrical Instruments and Equipment

(a) Before use upon a client, all non-electrical tools that can be disinfected, excluding shears, shall be disinfected in the following sequential manner:

(1) Remove all visible debris.

(2) Clean with soap or detergent and water.
(3) Completely dry tools with a new, clean paper towel.
(4) Then totally immerse in an EPA-registered disinfectant with demonstrated bactericidal, fungicidal, and virucidal activity, used according to manufacturer's instructions.
(5) Licensees or students shall wear protective gloves or use tongs when removing tools from the disinfectant.

Note: Authority cited: Section 7312, Business and Professions Code. Reference: Section 7312(e), Business and Professions Code.

In its research, staff located the report, "Safer Products and Practices for Disinfecting and Sanitizing Surfaces." This report summarizes the two year efforts of the San Francisco Department of the Environment and its consultants, primarily the Green Purchasing Institute, in its investigation of identifying safer disinfecting products. The report has been included for your review.
In your review of the report, please keep in mind that the Board is not in the position to endorse or recommend any particular brand of disinfectant (liquid, wipe or spray).

Currently, Board regulations regarding disinfectants include the following requirements (CCR § 979):

1. EPA registered
2. Demonstrated bactericidal, fungicidal and virucidal activity (no label mention)
3. Used according to manufacturer's instructions

Exceptions

Electrical Tools/Shears – EPA registered spray or wipe disinfectant, with demonstrated bactericidal, fungicidal and virucidal activity

.

Foot spas and foot basins/tubs – EPA registered hospital-liquid disinfectant which the label claims is a bactericide, fungicide and virucide

Steps Already Implemented by the Board to Limit Water Usage in Salons

The Board has been very industrious in promulgating regulation to limit water usage within the disinfection process. On July 1, 2016 the following California Code of Regulations (CCR) became effective.

§ 980.4 Disposable Foot Basin or Tub Liners

(a) Single use, disposable, recyclable, liners designed specifically and manufactured for use as a foot basin or tub liner shall be disposed of immediately after each use and may not be disinfected or reused.

(1) After disposal of the pedicure basin liner the basin or tub shall be scrubbed and cleaned of all visible debris with a clean brush and liquid soap (labeled as such on soap product) and water. The foot basin or tub shall be rinsed with clean water and wiped dry with a new, clean paper towel.
(2) Record the cleaning procedure in the pedicure equipment – cleaning log. The log shall contain the date and time of each cleaning, initials of the person who completed the procedure, and shall indicate that the cleaning was done after a client.

(3) The pedicure equipment-cleaning log shall be made available upon request by either a client or a board representative.
(4) Establishments or schools that utilize the liners must maintain a supply of five (5) liners per foot tub basin for use at all times.

Note: Authority cited: Sections 7312 and 7406, Business and Professions Code. Reference: Section 7312(e), Business and Professions Code.

This regulation is effective as it does not require the technician to run water and an EPA registered liquid disinfectant through the foot spa basin after each client, at the end of the day or on a weekly basis. Depending on how many pedicures a salon performs, the simple change of using foot spa liners could result in hundreds of gallons of water conserved.

§ 979 (f-g). Disinfecting Non-Electrical Instruments and Equipment

(f) Shears shall be disinfected according to the following sequential procedures:

(1) Remove all visible debris.
(2) Clean with soap or detergent and water.
(3) Spray or wipe the shear with an EPA-registered disinfectant with demonstrated bactericidal, fungicidal, and virucidal activity, used according to manufacturer's instructions.

(g) Disinfected shears shall not be placed in a container, pouch or holder which cannot be disinfected.

(h) If tools specified in this section are sterilized in accordance with the requirements outlined in Section 982, the requirements of this section will be deemed to have been met.

Note: Authority cited: Section 7312, Business and Professions Code. Reference: Section 7312(e), Business and Professions Code.

This regulation was modified to allow shears to be wiped or sprayed with an EPA registered disinfectant instead of soaking in a liquid disinfectant. Shears are in constant use in most salons, allowing for the shears to be wiped or sprayed limits how many tools are required to soak in the liquid disinfectant. Limiting how many tools must soak in a liquid disinfectant may possibly allow the disinfectant to stay equitable for a longer period of time; thereby limiting how many times the liquid disinfectant must be changed.

§ 980. Disinfecting Electrical Tools

(a) Clippers and other electrical tools shall be disinfected prior to each use in the following sequential manner:

(1) First removing all visible debris; and
(2) Disinfect with an EPA-registered disinfectant spray or wipe with demonstrated bactericidal, fungicidal, and virucidal activity used according to manufacturer's instructions.

(b) All disinfected electrical tools shall be stored in a clean place.
(c) All soiled electrical tools used on a client, or soiled in any manner, shall be placed in a container labeled "Soiled", "Dirty" or "Contaminated" (excluding hot styling tools).

Note: Authority cited: Section 7312, Business and Professions Code. Reference: Section 7312(e), Business and Professions Code

This regulation allows for electrical equipment to be disinfected by using an EPA registered disinfectant spray or a wipe. Limiting how many tools must soak in a liquid disinfectant may

possibly allow the disinfectant to stay equitable for a longer period of time; thereby limiting how many times the liquid disinfectant must be changed.

§ 979 (h). Disinfecting Non-Electrical Instruments and Equipment

(h) If tools specified in this section are sterilized in accordance with the requirements outlined in Section 982, the requirements of this section will be deemed to have been met.

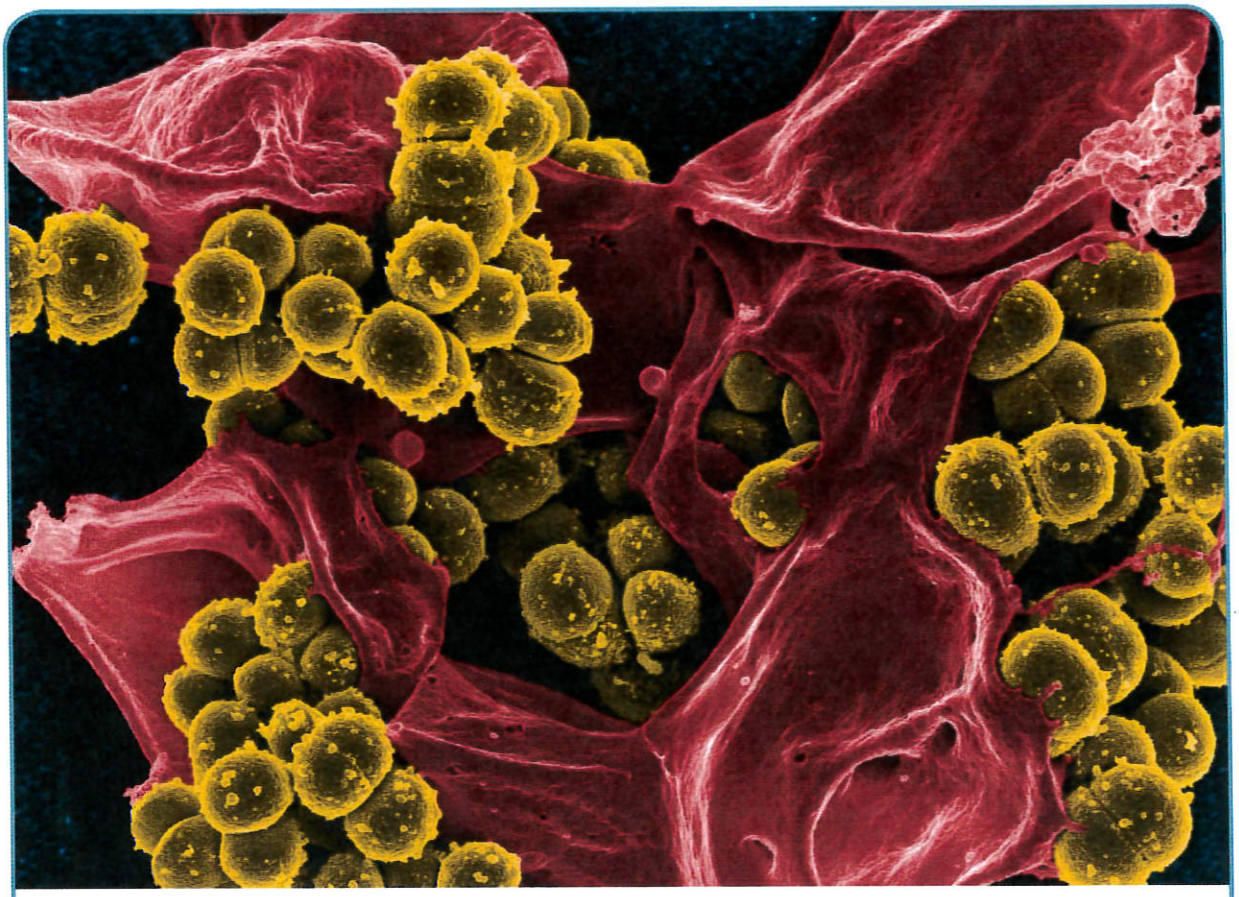
Note: Authority cited: Section 7312, Business and Professions Code. Reference: Section 7312(e), Business and Professions Code.

This regulation allows for the use of an autoclave or dry heat sterilizer for the disinfection of non-electrical tools, provided specified requirements are met. This regulation eliminates the need for liquid disinfectant to be used, thereby, greatly reducing the need for water usage in the salon.

Current Industry Trends in Water Reduction

On June 10, 2016, in an article written by Belinda Carli, Director of the Institute of Personal Care Science it was noted, "Consumers are increasingly looking to balance their use of products with an environmental conscience, and we're seeing this demand met by a new wave of product being promoted as 'waterless'. The article stated that consumers are making a firm move to dry shampoos, waterless beauty bars, oil to powder products, glycerin in oil products, powder to water products, powder to foam products, silicone based foundations, sticks, lip color and powders.

The Board has become aware of nail salons which offer waterless manicures/pedicures. All products are wiped off the client with no water being used during the service and since the client's foot is never soaked in a foot spa, no water is used during disinfection of the foot spa thereby, greatly reducing the need for water in the service.



Safer Products and Practices for Disinfecting and Sanitizing Surfaces

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A Department of the City and County of San Francisco

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Cover photo: Scanning electron micrograph of methicillin-resistant *Staphylococcus aureus* (MRSA) and a dead human neutrophil, courtesy of the National Institute of Allergy and Infectious Diseases.

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Overview

Nearly all public facilities – such as schools, parks and office buildings – use a substantial amount of surface sanitizing and disinfecting products while cleaning their restrooms and other public spaces. These products are inherently toxic, as they are formulated to kill living organisms. As such, the U.S. Environmental Protection Agency (U.S. EPA) and California Department of Pesticide Regulation (CA DPR) register all surface sanitizers and disinfectants as pesticides. Although all of these "antimicrobial" products have risks, there are a few types that pose greater, long-term risks to custodial workers and building occupants because they contain active ingredients that have been found to cause asthma (e.g., chlorine bleach/sodium hypochlorite, peroxyacetic acid, and quaternary ammonium compounds), cancer (e.g., ortho-phenylphenol), skin sensitization (e.g., chlorine bleach, pine oil, and thymol) or other health hazards. Several also pose environmental risks as well, such as silver and quaternary ammonium chloride compounds.

Surface sanitizers and disinfectants with more benign health and environmental impacts are available and often have equivalent or greater efficacy. However, these products have been difficult for purchasers to identify because US law prohibits the use of ecolabels on EPA-registered pesticides, and because of the complex nature of the problem; that is, consideration must be given to efficacy against a variety of pathogens, as well as factors such as surface compatibility and dwell time. The U.S. EPA's Design for the Environment (DfE) program is currently completing an *Antimicrobial Pesticides Pilot Project* that promises to assist consumers in this regard.[1] However, the breadth of DfE-Recognized products was inadequate at the time of this writing to meet the needs of the City & County of San Francisco.

In keeping with San Francisco's Precautionary Principle Ordinance[2], the City's Department of the Environment contracted with the Green Purchasing Institute – in collaboration with the Responsible Purchasing Network – to conduct an alternatives analysis of non-food-contact surface sanitizers and disinfectants appropriate for public facilities. GPI also evaluated antimicrobial products that may be needed to address specific situations such as bodily fluid spills, *Norovirus* outbreaks, or athlete's foot fungus in locker rooms.

The resulting alternatives analyses (Tables 1 & 4) provide an overview of health and environmental risks, efficacy claims, dwell times and surface compatibilities. The analysis includes a review of the available information on the active ingredients themselves as well as an evaluation of specific products. This report concludes that San Francisco should focus on hydrogen peroxide, lactic acid, and citric acid-based disinfectants and sanitizers, with silver-based products also considered appropriate for very limited circumstances. The analysis also identifies examples of safer products (those with a relatively lower toxicity profile) that are registered as effective non-food-contact surface sanitizers and disinfectants.

Product attributes are detailed in Appendix A. Appendix B lists evaluated products registered for use in preventing the growth of athlete's foot fungus in areas such as locker room floors, cleaning up after bodily fluid spills, or addressing a *Norovirus* outbreak. Appendix C highlights several "best practices" relating to the selection, dilution and use of surface sanitizers and disinfectants.

Definitions

The U.S. Environmental Protection Agency (U.S. EPA) registers all non-food-contact surface sanitizers and disinfectants as pesticides. Below are some important definitions.

Non-Food-Contact Surface Sanitizers

According to the U.S. EPA, a non-food-contact surface sanitizer is "a substance, or mixture of substances, that reduces the bacterial population in the inanimate environment by significant numbers, (e.g., 3-$\log_{10}$ reduction) or more, but does not destroy or eliminate all bacteria."[3] This
3-log reduction in bacteria equates to reduction of the test organisms by 99.9%. As such, these products are

used to reduce, but not necessarily eliminate, microorganisms from inanimate surfaces.

The required test organisms for this type of sanitizer are *Staphylococcus aureus* plus either *Klebsiella pneumoniae* or *Enterobacter aerogenes*. In order for a product to be registered by the U.S. EPA as a sanitizer for non-food-contact surfaces, it must demonstrate the ability to cause a bacterial reduction of at least 99.9% within 5 minutes.[4] Efficacy claims against additional pathogens will be listed on the label.

Surface sanitizers tend to be less concentrated than disinfectants and, therefore, less expensive. For example, one concentrated Accelerated Hydrogen Peroxide (AHP™) product called *Oxivir Five 16* is registered as a non-food-contact surface sanitizer when it is diluted 1:128, and it is registered as a healthcare environment disinfectant at a stronger dilution of 1:16. That makes the sanitizing solution of Oxivir 1/8th, or about 12% of the cost of the disinfecting solution.

Often, the use of surface sanitizers (instead of disinfectants) can save time because their dwell time is typically shorter. In such cases, a product (with the same AI concentration) can be registered as a sanitizer with one dwell time (up to 5 minutes) and as a disinfectant with another, longer dwell time (up to 10 minutes). Pre-diluted, ready-to-use (RTU) products such as *Lysol Brand III Disinfecting All Purpose Cleaner,*[5] which contains 3.2% lactic acid, exemplify this. This product is a non-food-contact surface sanitizer in 30 seconds and a disinfectant in 10 minutes.

In some cases, where the disinfectant concentration is stronger than the sanitizer, users may need to undertake an extra step of rinsing off the disinfectant solution after the requisite dwell time in order to prevent exposure to the chemical by facility users or corrosive effects to surface materials. For example, Ecolab's *65 Disinfecting Heavy Duty Bathroom Cleaner*, a concentrate that contains 3.05% caprylic acid, is registered as a healthcare-environment disinfectant when ¾ cup (6 oz.) of it is diluted with one gallon of water and left on the surface for 10 minutes. According to the EPA-approved label for this product, after the requisite dwell time, users are supposed to wipe the surface with a damp cloth or sponge, and then rinse it with potable water. In contrast, no rinse step is required when this product is used as a non-food-contact surface sanitizer (i.e., diluted only 3 oz. per gallon of water). Not only is the dwell time cut in half, but also the residual solution can be left on the surface to air dry.

Surface Disinfectants

According to the U.S. EPA, a disinfectant is a "substance, or mixture of substances, that destroys or irreversibly inactivates bacteria, fungi and viruses, but not necessarily their spores.[6 i] In order for a product to be registered by the U.S. EPA as a surface disinfectant, it must demonstrate the ability to prevent the test bacteria from growing in 59 out of 60 samples when left on for the stated dwell time, which may be no more than 10 minutes.[7]

The U.S. EPA has three classifications of disinfecting claims, each with their own test organisms[8]. In order of 'strength', they are as follows:

[i]Although many companies, microbiologists, and other experts in the field often refer to a disinfectant as causing 99.999% (5-log) kill in no more than 10 minutes, the U.S. EPA does not define disinfectants in these terms. Rather, this is an estimate, or assumption, and perhaps an attempt to align the definition of 'disinfectant' with that of 'food-contact surface sanitizer' (99.999% kill required in 1 minute or less) or 'non-food-contact surface sanitizer' (99.9% kill in 5 minutes or less). It is not an official definition and cannot be referenced in the U.S. EPA or other regulatory agency literature.

1. *Healthcare Environment Disinfecting Claim*: To make this claim, a disinfectant must meet test requirements (prevent bacteria from growing in 59/60 trials) for *Staphylococcus aureus*, *Salmonella enterica*, and *Pseudomonas aeruginosa* in 10 minutes or less. Healthcare environment disinfectants are not required to claim efficacy against any viruses or fungi, although many do.

2. *General or Broad Spectrum Disinfecting Claim*: To make this claim, a disinfectant must meet test requirements for at least two bacteria: *Staphylococcus aureus* (gram-positive) and *Salmonella enterica* (gram-negative) in 10 minutes or less.

3. *Limited Efficacy Disinfecting Claim*: To make this claim, a disinfectant must meet test requirements for either *Staphylococcus aureus* (representing gram-positive bacteria) OR *Salmonella enterica* (representing gram-negative bacteria), but not both in 10 minutes or less. Pinalen, which lists 5% pine oil as its only active ingredient, is an example of a "limited disinfectant against gram-negative bacteria".[9] Another example is *Windex Multi-surface Antibacterial*[10] (with 0.18% lactic acid), which claims efficacy against *Salmonella* but not *Staphylococcus*. Its U.S. EPA-approved label provides instructions on how "to disinfect and kill gram-negative bacteria on hard, non-porous surfaces."

Some disinfectants can make different disinfecting claims depending on the dwell time or dilution that is used. For example, the U.S. EPA-approved label for the concentrated chlorine bleach product included in this evaluation states that it is registered as a *general* disinfectant when it is diluted ½ cup per gallon of water with a five-minute dwell time. In contrast, it is registered as a *healthcare-environment* disinfectant only when (at the same dilution) it is left on the surface for 10 minutes, because that is the dwell time needed to kill *Pseudomonas aeruginosa*.

Compared to non-food-contact surface sanitizers, disinfectants are often much stronger and, therefore, more expensive. Or, in some cases, they simply need to be left on the surface longer to achieve a higher efficacy against bacteria and other pathogens. For more information on where to use sanitizers, disinfectants, or green cleaners, refer to Appendix C: *Best Practices for Cleaning, Sanitizing, and Disinfecting*.

While disinfectants are required to *demonstrate* efficacy only against a small number of bacteria, they are typically effective against a wide range of bacteria (including, in some cases, antibiotic-resistant strains such as MRSA) as well as viruses (such as influenza (flu) virus and HIV), and/or fungi (such as athlete's foot fungus, mold and mildew). Because of the increasing concern about viruses such as the Influenza "flu" virus, *Norovirus*, HIV, and others, there is an increasing use of disinfectants that are also registered as virucides (see below).

Disinfectants and non-food-contact surface sanitizers may not be appropriate for use on surfaces that contact food. For these applications a product specifically registered as a food-contact surface sanitizer must be employed, and these are subject to different efficacy criteria.

Other definitions

- *Cleaner-Disinfectant:* According to the U.S. EPA, "an antimicrobial agent identified as a 'one-step' cleaner-disinfectant, cleaner-sanitizer, or one intended to be effective in the presence of organic soil must be tested for efficacy by the appropriate method(s) which have been modified to include a representative organic soil such as 5% blood serum." The agency warns that even when such products are used, "when the surface to be treated has heavy soil deposits, a cleaning step must be recommended prior to application of the antimicrobial agent."[11]

- *Dwell time:* Dwell time is the length of time a product must remain wet on a surface to reach the kill level specified on the label. Together, efficacy and dwell time indicate how effectively and quickly a surface sanitizing or disinfecting product works compared to others in its class.

- *Efficacy:* Efficacy here refers only to the level of microbial kill against specific bacteria, viruses and/or fungi claimed on the most current U.S. EPA-approved label for a given product. In many cases a compound may actually be capable of killing many other kinds of microbes, but the manufacturer has chosen to submit data only on a more limited subset.

- *Fungicide:* An antimicrobial product may be labeled as a *fungicide* if it is registered by the U.S. EPA as effective against at least one fungus such as athlete's foot fungus, *Candida albicans*, mold or mildew. To make this claim about a specific fungus, a product must completely kill the test microorganism on the surfaces tested in 59 out of 60 attempts.[12]

- *Germicide:* A product may be labeled a *germicide* if it is *registe*red by the U.S. EPA as a general disinfectant (effective against both *Staphylococcus* and *Salmonella* bacteria) AND a virucide or a fungicide.

- *Respiratory sensitizer:* Under the Globally Harmonized System of Classifying and Labeling of Chemicals (GHS)[13], a respiratory sensitizer is a "substance that induces hypersensitivity of the airways following inhalation of the substance."

- *Reactive Airway Dysfunction Syndrome (RADS):* RADS chemicals can cause an asthma-like syndrome after a single exposure to high levels of an irritating vapor, fume, or smoke.[14]

- *Virucide*: An antimicrobial product may be labeled as a *virucide* if the U.S. EPA registers it as effective at killing a least one virus. Such claims may be made for products that are also bacterial disinfectants or sanitizers and must be restricted to those viruses that have actually been tested.[15]

Methods

Scope

This *Alternatives Analysis* is based on a comparison of 11 active ingredients commonly found in non-food-contact surface sanitizers and disinfectants[ii]. Beside disinfectant products, we also examined data on electrolyzed water and steam devices, although this review was limited. Active ingredients reviewed were:

- Caprylic acid (aka Octanoic acid)
- Citric acid
- Hydrogen peroxide (H_2O_2), including stabilized or "accelerated" products
- Lactic acid
- Ortho-phenylphenol (OPP)
- Peroxyacetic acid (PAA) + hydrogen peroxide (H_2O_2)
- Pine oil
- Quaternary ammonium chloride compounds ("quats")
- Silver + citric acid (or hydrogen peroxide)
- Sodium hypochlorite (e.g., chlorine bleach, CAS #7681-52-9)
- Thymol (a component of thyme oil)

The recommendations in this report are based on two levels of review:

[ii] Note: Hydrogen chloride, not evaluated in this assessment, is also found as a breakdown product in some disinfectants. It is toxic, very acidic and corrosive, and listed by AOEC as an asthmagen associated with Reactive Airways Dysfunction Syndrome (RADS).

(1) *Active Ingredient Review*, which summarizes:
   a. Health risks (such as the potential to cause cancer, asthma, or corrosive damage to the eyes or skin); and
   b. Environmental risks (such as the potential to persist in the environment, harm fish and other aquatic species, or cause eutrophication).

   The active ingredient review focused on chronic health and environmental hazards because these hazards are less dependent on ingredient concentration.

(2) *Sample Product Review*, which summarizes a broader array of health and environmental risks as well as the efficacy claims, dwell times and surface and chemical compatibilities of 28 sample registered disinfectants containing one of the 11 active ingredients ("AIs") listed above. The intent was to evaluate sample products that represent active ingredient concentrations found in available products. Usually this meant a complete evaluation of two products per active ingredient (one concentrate and one ready-to-use formulation), although the actual number of products reviewed varied. In addition, several other products were partially reviewed, largely to determine whether products with different concentrations of AIs listed similar health effects, efficacy or dwell time. See Appendix D, Table 8 for the list of sample disinfecting products that were included in this alternatives assessment. Overall, 33 disinfectants and 24 non-food-contact sanitizers were reviewed. (Note that a separate table of non-food-contact sanitizers was not included because the differences in efficacy were found to be negligible. Instead, information on the sanitizing efficacy and dwell time of the evaluated disinfectants was noted in Appendix D, Table 9.)

   Review at the product level permitted a review of acute hazards such as eye and skin irritation. While these are key worker health issues, they were assigned less priority for products available in closed-loop dilution systems, which prevent workers from being exposed to concentrated products.

Information Sources

In the *Active Ingredient Review*, the primary information sources included the U.S. EPA's Reregistration Eligibility Documents (REDs) for each antimicrobial ingredient studied, material safety data sheets (MSDSs) for the active ingredient, data available in summary format through the Pharos Project[16], and peer-reviewed scientific journal articles. The Pharos Project ranking system is informed by the benchmarking system of the Green Screen for Safer Chemicals[17] developed by Clean Production Action. The foundation of the Green Screen method is the Principles of Green Chemistry[18] and the work of the US Environmental Protection Agency's (EPA's) Design for the Environment (DfE). In addition, the assessment relied on the following sources to evaluate specific health risks:

- *Cancer*: California's "Prop 65" *List of Chemicals Known to the State of California to Cause Cancer, Birth Defects and Other Reproductive Harm*[19] (with a cancer notation); National Toxicology Program's *Report on Carcinogens (12th Edition)*; and the International Agency for Research on Cancer (IARC)'s *Agents Classified by the IARC Monographs* document.[20]
- *Reproductive toxicity:* California's "Prop 65" *List of Chemicals Known to the State of California to Cause Cancer, Birth Defects and Other Reproductive Harm* (with a notation about reproductive or developmental effects).
- *Asthma:* Association of Occupational and Environmental Clinics' (AOEC) list of asthmagens[21] and the National Institutes of Health's 2011 report, *Healthy Environments: A Compilation of Substances Linked to Asthma.*[22]
- *Skin Sensitization:* European Union's REACH designation code of R43: "May cause sensitization by skin contact".[23]

In the Sample Product Review, the primary information sources included the most recent U.S. EPA-approved product label, information found in the CA DPR Product/Label Database, and the MSDS for at least one concentrated and one pre-diluted, ready-to-use (RTU) product per active ingredient or combination of active

ingredients (e.g., silver + citric acid or PAA + H_2O_2). Some of the information that was typically found in these information sources included each product's:

- Skin, eye and respiratory irritation potential
- pH
- HMIS score (which evaluates a product for health, flammability, and reactivity)
- Registered efficacy against specific bacteria, viruses, and/or fungi
- Registered dwell time (which may vary by pathogen, product concentration, application method, or other factors)
- Surface compatibility
- Presence of chemicals not listed as active ingredients that may contribute to the product's health/environmental impacts or efficacy (e.g., phosphorus, ethyl alcohol or quats)

The AI-level assessment gives information on chronic issues such as cancer and asthma risks, while the product-level evaluation better represents acute hazards of the product as formulated.

Evaluation and Coding Methods

Below is a description of the methods that were used to code and evaluate the information collected during this review.

- ***Cancer***
  - 0/Green: Carcinogenicity to Humans Not Known or Suspected: This chemical is not on the CA Prop 65 List with a cancer notation, is not listed in the National Toxicology Program (NTP) *Report on Carcinogens (12th Edition)* as a "Known" or "Reasonably Anticipated Human Carcinogen", or is not on the following IARC cancer lists 1: "Carcinogenic to Humans", 2A: "Probably Carcinogenic to Humans", or 2B: "Possibly Carcinogenic to Humans". In addition, there is no mention of carcinogenicity in the U.S. EPA RED or MSDS for this active ingredient; and no known studies raising concern about carcinogenicity were found.
  - 1/Yellow – Suspected Human Carcinogen: This chemical is listed as "Reasonably Anticipated as a Human Carcinogen" in the NTP *Report on Carcinogens* (12th Edition)[24]; is on the IARC 2A List ("Probably Carcinogenic to Humans") or 2B List ("Possibly Carcinogenic to Humans"); or "Suspected Carcinogen" is mentioned in the EPA RED or the active ingredient's MSDS.
  - 2/Red – Known Human Carcinogen: This chemical is on the CA Prop 65 List with a "cancer" notation; is listed as a "Known Human Carcinogen" in the NTP's *Report on Carcinogens (12th Edition)*; or is on the IARC Group 1 List ("Carcinogenic to Humans").

- ***Reproductive or Developmental Toxicity***
  - 0/Green – Reproductive or Developmental Toxicity Not Known or Suspected: This chemical is not on the CA Prop 65 List with a reproductive or developmental toxicity notation and no references to birth defects or other reproductive or developmental toxicity issues were found in the EPA RED or the MSDS for this active ingredient.
  - 1/Yellow – Suspected Reproductive or Developmental Toxicity: "Suspected Reproductive or Developmental Toxin" is mentioned in the EPA RED, in the chemical's MSDS or in scientific literature.
  - 2/Red – Known Reproductive or Developmental Toxicity: This chemical is on the CA Prop 65 List with a reproductive or developmental toxicity notation. Alternatively, known reproductive or developmental toxicity is mentioned in the EPA RED, the chemical's MSDS or in other weight of evidence lists.

- ***Respiratory Irritation***
    - 0/Green – Not a Respiratory Irritant: Representative products do not claim any respiratory irritation on the EPA-approved product label or product MSDS.
    - 1/Yellow – Mild Respiratory Irritant: "Mild" or "may be" were the strongest terms used to describe respiratory irritation on the EPA-approved product label or product MSDS.
    - 2/Light Orange – Moderate Respiratory Irritant: "Moderate" was the strongest term used to describe respiratory irritation on the EPA-approved product label or product MSDS. If a document stated only "this product is irritating to the respiratory system" without a qualifier, it received a 'moderately irritating' rating.
    - 3/ Orange – Severe Respiratory Irritant: Respiratory irritation was described as 'severe' on the EPA-approved product label or the product MSDS contained the phrase "causes severe but not permanent burns to the respiratory tract".
    - 4/Red – Permanent Damage to Respiratory System: The EPA-approved product label or the product MSDS contained the phrase "corrosive", "causes permanent burns" or "causes permanent damage" to the respiratory tract.

- ***Asthma***
    - No/Green – Not listed as an Asthmagen: Not listed as an asthmagen (A) in the Association of Occupational and Environmental Clinics (AOEC) Exposure Code Lookup Database.[25]
    - Yes/Red – Asthmagen: Listed as an asthmagen (A) in the AOEC Exposure Code Lookup Database. This includes asthmagens that AOEC lists as causing respiratory sensitization (Rs), reactive airway dysfunction syndrome (RADS), or both (Rrs), as well as those that are generally accepted as an asthmagen (G).

- ***Skin Irritation and Sensitization***
    - 0/Green – No Evidence of Skin Irritation: There was no mention of dermal or skin irritation on the EPA-approved product label or the product MSDS.
    - 1/Yellow – Mildly Irritating to the Skin: 'Mild' was the strongest term used to describe dermal or skin irritation on the EPA-approved product label or product MSDS.
    - 2/Light Orange – Moderately Irritating to the Skin: 'Moderate' was the strongest term used to describe dermal or skin irritation on the EPA-approved product label or product MSDS. If a document stated only "this product is irritating to the skin" without a qualifier, it received a 'moderately irritating' rating.
    - 3/Orange – Severely Irritating to the Skin: 'Severe' was the strongest term used to describe dermal or skin irritation on the EPA-approved product label or product MSDS.
    - 4/Red – Likely to Cause Permanent Damage to the Skin: The EPA-approved label or product MSDS mentioned "permanent skin burns" or "permanent skin damage".
    - S/Red – Skin Sensitizer: Dermal or skin sensitization was noted in the EPA RED or the MSDS for the active ingredient (AI), or the AI holds the European Union REACH risk designation R43: "May cause sensitization by skin contact".

- ***Eye Irritation***
    - 0/Green – No Evidence of Eye Irritation: There was no mention of eye irritation on the EPA-approved product label or the product MSDS.

- 1/Yellow – Mildly Irritating to the Eyes: 'Mild' was the strongest term used to describe eye irritation on the EPA-approved product label or product MSDS.
- 2/Light Orange – Moderately Irritating to the Eyes: 'Moderate' was the strongest term used to describe eye irritation on the EPA-approved product label or product MSDS. If a document stated, "this product is irritating to the eyes" without a qualifier, it received a 'moderately irritating' rating.
- 3/Orange – Severely Irritating to the Eyes: 'Severe' was the strongest term used to describe eye irritation on the EPA-approved product label or product MSDS.
- 4/Red – Likely to Cause Permanent Damage to the Eyes: The EPA-approved product label or product MSDS mentioned "permanent eye damage", "corrosive effects on the eyes" or "blindness".

- ***HMIS(Hazardous Materials Identification System) Score***
  - 0/Green: 0 = Highest Number in HMIS Score (0=lowest hazard)
  - 1/Yellow: 1 = Highest Number in HMIS Score
  - 2/Orange: 2 = Highest Number in HMIS Score
  - 3/Red: 3 = Highest Number in HMIS Score (3=highest hazard)

- ***pH***
  - 0/Green – Neutral: 6<pH<8
  - 1/Yellow: 4<pH<6 OR 8<pH<10
  - 2/Orange: 2<pH<4 OR 10<pH<12
  - 3/Red: pH<2 OR pH>12 (Corrosive)

- ***Aquatic Toxicity***
  - The Pharos Project web tool[16] was the primary data source for aquatic toxicity. "Acute" aquatic toxicity is defined by Pharos as cases where "a single exposure in a day may result in severe biological harm or death to fish or other aquatic organisms." In the definition for "chronic" aquatic toxicity "long term exposure of months or years may result in irreversible harm to fish or other aquatic organisms."
  - 0/Green – No Evidence of Aquatic Toxicity: No mention of toxicity to aquatic organisms in Pharos Project screening tool.
  - 1/Yellow – Moderate Aquatic Toxicity: 'Medium hazard" (acute aquatic toxicity) was the strongest term in the Pharos Project screening tool. No chronic aquatic toxicity noted.
  - 2/Orange– High Aquatic Toxicity: 'High hazard' (acute aquatic toxicity) was the strongest term in the Pharos Project screening tool. No chronic aquatic toxicity noted.
  - 3/Red – Very High Aquatic Toxicity: 'Very high hazard' was the strongest term in the Pharos Project screening tool – OR - 'medium hazard' for acute aquatic toxicity combined with at least medium hazard for chronic aquatic toxicity.

    High acute aquatic toxicity for an active ingredient is of less concern if the chemical is rapidly degraded; thus, aquatic toxicity ratings should be examined together with persistence.

Note: Antimicrobial products intended for indoor use are not required by the U.S. EPA to supply information on aquatic toxicity on their product label; all aquatic toxicity information supplied is voluntary. Therefore, the absence of aquatic toxicity information on the U.S. EPA label is not an indication of lack of aquatic toxicity.

- ***Persistence in the Environment***
  - 0/Green – Low Persistence: This chemical would rate as a "low" level of persistence under the Green Screen for Safer Chemicals™ (v 1.2) threshold values.[26]
  - 1/Yellow – Medium Persistence: This chemical would rate as a "medium" level of persistence under the Green Screen for Safer Chemicals™ (v 1.2) threshold values.
  - 2/Orange – High Persistence: This chemical would rate as a "high" level of persistence under the Green Screen for Safer Chemicals™ (v 1.2) threshold values.
  - 3/Red – Very High Persistence: This chemical would rate as a "very high" level of persistence under the Green Screen for Safer Chemicals™ (v 1.2) threshold values.

- ***Eutrophication***
  - No/Green – Not Likely to Contribute to Eutrophication: Neither the EPA-approved product label nor the MSDS for any of the products evaluated list phosphorus-containing compounds as ingredients.
  - Yes/Red – Contributes to Eutrophication: Either the EPA-approved product label or the MSDS for at least one of the products evaluated lists phosphorus-containing compounds as ingredients.

Active Ingredient Summary

A primary goal of this alternatives assessment is to find safer replacements for surface disinfectants and non-food-contact sanitizers carrying significant health and environmental risks. Other priorities for replacement include products that are packaged in aerosol containers – because they are relatively expensive and can increase exposure, particularly via inhalation – as well as products with a relatively long dwell time, limited efficacy, extreme pH, or surface compatibility issues.

From the perspective of environmental and health risks, not all antimicrobial active ingredients (AIs) are created equal. Table 1 summarizes the health and environmental hazards of various surface disinfectant active ingredients. These effects conceivably occur irrespective of the concentration of the AIs in the representative products that were evaluated. The alternatives analysis summary table below covers the following:

- *Health impacts*
  - Cancer
  - Reproductive and developmental toxicity
  - Asthma
  - Skin sensitization
- *Environmental impacts*
  - Aquatic toxicity
  - Persistence

Note that without persistence, high aquatic toxicity alone has less importance, since many chemicals are quickly degraded in the environment.

A more detailed table (Table 4, Appendix A) presents information about the attributes of the 28 representative surface disinfecting products, which vary based on the specific formulation of each product. These attributes include: registered efficacy claims against bacteria, viruses and fungi as well as dwell time for surface disinfecting and non-food-contact sanitizing; irritation effects; pH; HMIS scoring, and eutrophication potential (caused by the presence of phosphorus in the product).

Table 1. Summary of Health and Environmental Attributes of 11 Active Ingredients Commonly Found in Surface Disinfectants and Non-food Contact Sanitizers

ACTIVE INGREDIENT	CANCER	REPRODUCTIVE TOXICITY	ASTHMA	SKIN SENSITI-ZATION	AQUATIC TOXICITY	PERSISTENCE
Caprylic Acid	No	No	No	No	Med acute	Low
Citric Acid	No	No	No	No	None	Low
Hydrogen Peroxide	No[1]	No	No	No	High acute	Low
Lactic Acid	No	No	No	No	None	Low
Ortho-Phenylphenol (OPP)	Known	Suspected	No	No	Very high acute	Low
Peroxyacetic Acid (PAA)	No	No	Yes	No	Very high acute	Low
Pine Oil	No[2]	No	No[3]	Yes	None	Low
Quaternary Ammonium Chloride Compounds (Quats)	No	Suspected	Yes	One compound[4]	High acute, med	Very High
Silver	No	No	No	No	High acute	Very High
Sodium Hypochlorite (Chlorine Bleach)	No	No	Yes	No	Very high acute	Low
Thymol	No	No[5]	No	Yes	High acute	Low

[1] Not considered a human carcinogen, but categorized by ACGIH as a "confirmed animal carcinogen with unknown relevance to humans." The EU concluded it is a mutagen and genotoxicant in some in vitro tests but that "the available studies are not in support of significant genotoxicity/mutagenicity ... under in vivo conditions."

[2] Pine oil is not considered a human carcinogen. However, a recent study found that using pine oil-based cleaning products can create secondary pollutants such as formaldehyde, a known human carcinogen.

[3] Pine oil is not an AOEC asthmagen, but some pine oil disinfectants also contain tall oil – a respiratory sensitizer and pine derivative.

[4] Generally not considered skin sensitizers except for benzalkonium chloride, but quats have the European Union REACH Directive "R43" designation, meaning "May cause sensitization by skin contact."

[5] Thymol does not pass Green Screen for reproductive toxicity or genetic toxicity, but the reliability of the studies cited is low

Summary of Active Ingredients Rejected During Screening

Although all U.S. EPA-registered surface sanitizers and disinfectants are "pesticides", they do not all carry equivalent health risks[27]. Several active ingredients are not recommended for use, including chlorine bleach (sodium hypochlorite), quaternary ammonium chloride compounds (quats), and peroxyacetic acid, which are

known asthmagens. Ortho-phenylphenol (OPP) was rejected primarily because it is on the California "Prop 65" list with a "cancer" notation. Thymol and pine oil were rejected primarily because they are known skin sensitizers as well as other health and efficacy issues.

Below is a summary of each of these active ingredients, detailing health and environmental hazards as well as efficacy, dwell time and surface compatibilities based on a review of sample products:.

Chlorine Bleach (Sodium Hypochlorite)

Sodium hypochlorite has been used extensively for decades as a surface disinfectant and sanitizer because it is readily available, relatively inexpensive, and versatile. At the disinfecting level, it has efficacy against a wide range of bacteria, viruses and fungi – although the concentration and dwell time needed to kill different pathogens varies.

Chlorine bleach has historically consisted of a solution of 5.25-6% sodium hypochlorite in "regular" brands and 6.15% in "ultra" brands, along with a small amount of sodium hydroxide (lye), a contaminant generated in the manufacturing process. However, in 2011, several manufacturers began marketing concentrated bleach products with an 8.25% sodium hypochlorite solution, significantly higher than previous formulations, and 2012 brought higher prevalence of these products in stores around the country (based on label updates for these products in mid- and late-2012). According to the National Resource Center for Health and Safety in Child Care and Early Education, several companies have communicated that they have discontinued manufacturing the 5.25%-6.15% sodium hypochlorite bleach solution and they will no longer be available at many stores.[28] And an onsite evaluation of drug and grocery chain stores in the San Francisco Bay area in 2013 revealed that the preponderance of chlorine bleach products with disinfecting or sanitizing claims contain 8.25% sodium hypochlorite. Consequently, the concentrated bleach product evaluated in this report, *Concentrated Clorox Regular Bleach*, EPA Registration No. 5813-100[29] contains this higher percentage of sodium hypochlorite.

Health: Concentrated chlorine bleach is corrosive to human skin, eyes and lungs. It has a very high pH (~12, which is considered caustic) according to the MSDS for the evaluated product. The U.S. EPA-approved label for the product that was included in this evaluation has the following precautionary statements: "DANGER" and "Causes irreversible eye damage and skin burns." Sodium hypochlorite is on the AOEC's list of asthmagens as a respiratory sensitizer (Rs). This means it can cause asthma in a previously healthy individual.[30] In addition, a study on occupational asthma conducted by four state health departments found 43 cases of "new onset asthma," mostly among custodial workers, that were attributed to the use of chlorine bleach.[31] In contrast, according to the US EPA, it is not a skin sensitizer.[32]

Because many chlorine bleach products are packaged in open containers, there is significant risk of improper dilution – either too strong or too weak – as well as spills and splashing during mixing. The higher concentration of sodium hypochlorite elevates this concern.

Concentrated chlorine bleach is also corrosive to many surfaces. Using chlorine bleach regularly on floors, for example, can eat away at floor polish, resulting in the need to strip and wax floors more often. This is both costly and hazardous to workers. According to the U.S. Centers for Disease Control, when chlorine bleach is mixed with acids (such as vinegar) or other ingredients in cleaners (particularly ammonia compounds), it can form and release chlorine gas (a respiratory sensitizer) and chloramine gas, both of which can be fatal if inhaled.

Environment: When released into surface water or the wastewater system, chlorine bleach can react with organic matter and form carcinogenic chlorinated compounds such as trihalomethanes[33].

Efficacy: Chlorine bleach products are often registered as both non-food-contact surface sanitizers and disinfectants. When used as directed on the U.S. EPA-approved label as a disinfectant sodium hypochlorite can have broad-spectrum efficacy against bacteria, viruses and fungi. The concentrated chlorine bleach product

reviewed (*Concentrated Clorox Regular Bleach*, which contains 8.25% sodium hypochlorite as its as the only listed active ingredient, is registered as a *general* disinfectant when it is diluted ½ cup per gallon with a 5-minute dwell time. When those instructions are followed, this product kills 13 strains of bacteria, 20 types of viruses (including all three bloodborne pathogens: HIV as well as hepatitis B and C viruses), and three categories of fungi (athlete's foot fungus, mildew, and *Candida albicans*, a type of yeast).

This product is also registered as a *healthcare-environment* disinfectant, but only when its dwell time is doubled to 10 minutes, which is the time needed to kill *Pseudomonas aeruginosa*, a test organism. By quadrupling the strength of the bleach solution (to two cups per gallon of water) and leaving it on the surface for 10 minutes, this product can kill *Mycobacterium bovis*, the pathogen responsible for tuberculosis (TB). Then, after the properly diluted solution has been left on the surface the requisite dwell time, it must be rinsed off with clean water. A new solution of chlorine bleach should be prepared daily as it loses potency.

Concentrated Clorox Regular Bleach (with 8.25% sodium hypochlorite) claims to be a non-food-contact surface sanitizer when diluted ½ cup per gallon, with a much shorter dwell time of 30 seconds. Two test bacteria (*Staphylococcus aureus* and *Klebsiella pneumoniae*) are the only pathogens listed under the label's section on efficacy claims for non-food-contact sanitizing. This product is also registered as a food-contact surface sanitizer, when it is diluted two teaspoons per gallon of water and left on the surface for two minutes.

There is at least one RTU product containing sodium hypochlorite as its only active ingredient that is registered as a disinfectant (*Bleach-Rite Disinfecting Spray with Bleach*[34]). It contains about 1% (0.94%) of this active ingredient. While it has a shorter dwell time than the diluted concentrate (one minute versus five minutes), it claims efficacy against fewer types of bacteria (10 strains, including MRSA), viruses (11, including HIV, influenza A (flu) virus, and *Norovirus*) and fungi (two, including athlete's foot fungus) than the diluted concentrate described above. With a two-minute dwell time, this product is also effective against TB. Although it is registered as a healthcare-environment disinfectant, it does not meet the *California Bloodborne Pathogen Standard* because it does not claim efficacy against hepatitis B or C viruses.

Clorox Commercial Solutions Anywhere Hard Surface Sanitizing Spray[35] is a ready-to-use product that contains a much lower concentration of sodium hypochlorite (0.0095%). It is *not* registered as a bacterial disinfectant and has no efficacy against viruses or fungi. However, it is non-food-contact surface sanitizer with efficacy against six strains of bacteria with a one-minute dwell time. It is also registered as a food-contact surface sanitizer with a two-minute dwell time.

Ortho-Phenylphenol (OPP)

Products that contain ortho-phenylphenol (OPP) are not recommended because this active ingredient is a human cancer-causing agent. All of the OPP-containing disinfectants evaluated also have a relatively long (10-minute) dwell time. Both concentrated and pre-diluted, ready-to-use (RTU) products are registered for use in California, although they all contain at least one other active ingredient such as other phenolic compounds (e.g., ortho-benzyl-para-chlorophenol and/or para-tert-amylphenol), quaternary ammonium chloride compounds, and/or ethyl alcohol. No non-food-contact surface sanitizers containing OPP were found.

Health: Ortho-phenylphenol (CAS #90-43-7) is listed as a "chemical known to the State of California to cause cancer."[36] U.S. EPA-approved labels for products containing OPP typically state they are irritating to the eyes, respiratory system, and skin. The concentrated OPP product evaluated (*Ecolab's 23 TB Disinfectant and Deodorizer*) is corrosive, with a DANGER precautionary signal word on its label, warning that it causes both eye and skin damage. According to the MSDS for this product, it has a very high pH (12 to 13).[37] Several ready-to-use OPP products – some of which are labeled as deodorizers as well as disinfectants – are packaged in aerosol containers, which can increase exposure via inhalation.

Environment: According to the RED for this chemical, OPP is very toxic to aquatic life[38] – although it has a half-life of 14 days, indicating it is unlikely to persist in the environment.

Efficacy: Ortho-phenylphenol (OPP) is typically found in surface disinfectants that can be used in healthcare environments, although neither of the two products evaluated meet the US or California *Bloodborne Pathogen Standard* because they are not registered to kill hepatitis B or C viruses. In addition, neither product is registered as a non-food-contact surface sanitizer. The concentrated OPP product evaluated (Ecolab's *23 TB Disinfectant & Deodorizer*[39]) claims broad-spectrum efficacy against 23 bacterial strains including MRSA, nine types of viruses including *Herpes Simplex Type I*, HIV and influenza A (flu) virus, as well as two types of fungi – athlete's foot fungus and *Candida albicans*. To disinfect against these organisms, one ounce of this product must be added to each gallon of water (for a 1:128 dilution) and "allowed to remain wet [on the treated surface] for 10 minutes." This product claims efficacy against *Norovirus* and is registered as a tuberculocide when its concentration in the use-solution is doubled to two ounces per gallon, with the same 10-minute dwell time.

The RTU sample OPP product (*Airysol Brand Multi-Purpose Disinfectant Cleaner II*[40]) claims efficacy against only the three required test bacteria to make disinfecting claims in a hospital environment plus five viruses (H1N1, Herpes Types 1 and 2, HIV, and influenza A (flu) virus). It is not registered to kill *E. coli*, MRSA or TB bacteria or any fungi (although it "prevents mold and mildew on hard surfaces"). Neither of these sample products meets either the US OSHA or California *Bloodborne Pathogen Standard* because they do not have registered efficacy against either Hepatitis B or C viruses.

Peroxyacetic Acid (PAA) (Usually in combination with hydrogen peroxide)

Peroxyacetic acid (CAS #79-21-0), also called peracetic acid, (CAS #89370-71-8) is often combined with hydrogen peroxide (H_2O_2) in surface sanitizers and disinfectants. In California, there are many products containing this combination of AIs registered as both disinfectants and non-food-contact surface sanitizers. (Some are registered as food-contact surface sanitizers as well.) Products containing PAA are not recommended, however, because the AOEC lists it as a substance that causes asthma via respiratory sensitization. Moreover, concentrated products containing this combination of active ingredients are corrosive and have other very strong health warnings. These problems are exacerbated by the fact that these products are not currently packaged in a closed-loop delivery system, leaving workers at risk of exposure to the concentrate. In addition, as disinfectants, these products have a relatively long dwell time (10 minutes) and their efficacy against viruses is very limited.

Health: As noted above, peroxyacetic acid (PAA) is listed as an asthmagen via respiratory sensitization by the AOEC, an authoritative body on this subject. In addition, concentrated products containing PAA + H_2O_2 have some of the strongest acute health warnings of any types of disinfectants. For example, the U.S. EPA-approved label for *SaniDate 5.0* includes the following precautionary statement: "DANGER: Corrosive. Causes irreversible eye damage and skin burns. May be fatal if inhaled or absorbed through the skin.... Do not breathe vapors or spray mist."[41] This product contains relatively high concentrations of these two AIs: 23% hydrogen peroxide and 5.3% PAA, and has a highly acidic pH of 1.3. The health risks posed by this product are exacerbated by the fact that the product is available in an open container that can enable workers to become directly exposed to the concentrate.

In contrast, *SaniDate Ready to Use*, which lists only 0.108% H_2O_2 on its label, has no such health warnings.[42] (Note: Although this product does not list PAA on its label or MSDS, the manufacturer confirmed that it does contain a small amount of this AI, which is a respiratory sensitizer in this pre-diluted product.) This RTU product is considered a less-toxic alternative to SaniDate 5.0 in this analysis because it lacks the acute toxicity hazards of the concentrate. Nevertheless, neither product is recommended because of PAA's potential to cause asthma.

Efficacy: Disinfecting products containing PAA + H_2O_2 are typically registered to kill a broad range of bacteria but their efficacy against viruses is very limited. For example, SaniDate 5.0, when used as a disinfectant (diluted 0.5 ounces per gallon of water with a 10-minute dwell time) has registered efficacy against 16 types of bacteria (including antibiotic-resistant strains such as MRSA), but only three types of viruses (human and avian influenza

(flu) virus as well as canine distemper virus). This product also is registered to kill two types of fungi (including athlete's foot fungus) and inhibits (but does not kill) mold and mildew.[43,44] SaniDate 5.0 is not registered to kill any of the three major bloodborne pathogens (HIV, HBV, or HCV). Consequently, it is not a good choice for cleanup of bodily fluids.

Surface disinfectants containing PAA + H_2O_2 are only available in concentrated form; they tend to be registered as sanitizers (for both food-contact and non-food-contact surfaces) as well, which adds to their versatility. No RTU products with this combination of AIs were found to be registered as disinfectants, although at least two are registered as sanitizers, including *SaniDate Ready to Use*, which was evaluated in this report.

As a non-food-contact surface sanitizer, the primary concentrated product evaluated (*SaniDate 5.0*[45]) claims bacterial efficacy against only the two test organisms (*Staphylococcus aureus* and *Klebsiella pneumoniae*) with a relatively short dwell time of one minute. In contrast, while *SaniDate Ready to Use*[46] is also registered as a non-food-contact surface sanitizer against the two test organisms, it has a much longer, 5-minute dwell time and is not registered as a disinfectant at all. (It is, however, registered as a *food-contact* surface sanitizer with a 1-minute dwell time.)

Pine Oil

Pine oil (CAS #89370-71-8) has a variety of health concerns and typically offers limited efficacy. In addition, there are many pine oil-containing cleaning products on the market that are not registered as antimicrobials since pine oil is widely used as a scent, which may confuse consumers.

Health: Pine oil is severely irritating to the eyes, moderately irritating to the skin, and may cause skin rashes and other allergic skin reactions. It is considered a "weak allergen and severe skin irritant" by the National Library of Medicine.[47] Pine oil is not on the AOEC's list of asthmagens; however, some pine oil disinfectants also contain tall oil – a respiratory sensitizer that is also a pine derivative – in addition to pine oil. Pine oil is considered a skin sensitizer, carrying the European Union's REACH Directive hazard code R43: "May cause a skin sensitization reaction." Although pine oil is not considered a cancer-causing agent, a recent study conducted in a simulated residential setting found that using pine oil-based cleaning products can create secondary pollutants such as formaldehyde, a known human carcinogen, which can linger for 12 hours after cleaning a surface.[48,49] There are many documented poisoning incidents involving pine oil-based cleaning products.[50] Pine oil can permeate the skin and may cause central nervous system effects and kidney damage.[51]

Environment: No environmental or aquatic toxicity information is available on the product labels, but the U.S. EPA categorizes pine oil as slightly toxic to fish and aquatic invertebrates. Pine oil breaks down into formaldehyde, which is more severely toxic to fish, and aquatic invertebrates.[52]

Efficacy: Antimicrobial surface cleaning products that contain pine oil as their only active ingredient are registered as disinfectants and non-food-contact surface sanitizers primarily against bacteria.
Pinalen, which lists 5% pine oil as its only active ingredient, is a "*limited* disinfectant against gram-negative bacteria" only; it has no efficacy claims against fungi or viruses.[53] This concentrated product, which is diluted 21 oz. per gallon of water, is one of the few pine oil products that does not list isopropyl alcohol on its MSDS.[54]

Clorox Commercial Solutions Pine-Sol Brand Cleaner (EPA Registration No. 5813-83-AA-67619), which is a ready-to-use *general* disinfectant that contains a higher percentage of pine oil (8.7%), claims efficacy against two strains of bacteria (*Staphylococcus* and *Salmonella*) as well as athlete's foot fungus (but no viruses). This product also contains isopropyl alcohol, according to its MSDS[55], which may add to its efficacy, even though it is not listed as an AI on its U.S. EPA-approved label.

Several pine oil disinfectants that claim efficacy against viruses are formulated with quaternary ammonium chloride compounds (quats) in addition to pine oil. These products tend to be concentrates that carry a

"DANGER: Corrosive" warning. We were unable to find any ~~concentrated disinfecting products~~ non-food-contact sanitizers that contain pine oil as their *only* active ingredient.

The typical dwell time for pine oil-based disinfecting products is 10 minutes. This includes products containing pine oil as the only active ingredient, and products that contain quats as active ingredients in addition to pine oil.

Some pine oil-containing products are listed as a ready-to-use (RTU) product for disinfection and a concentrate that users are instructed to dilute with water for cleaning. While this adds to its versatility, it can create confusion. For example, the EPA-approved label for *Clorox Commercial Solutions Pine-Sol Brand Cleaner* (EPA Registration No. 5813-83-AA-67619) directs users to dilute the product ¼ cup per gallon for general cleaning – or to clean and deodorize bathrooms. However, this product must be used full-strength in order to work as a disinfectant. The cost and/or strong smell of using the undiluted concentrate may deter some users from considering this type of disinfecting product practical, especially given its limited efficacy and 10-minute dwell time.

Note: A 2013 walkthrough of several grocery and drug stores in the San Francisco Bay area revealed that the predominant Pine-Sol product on the shelves, *Original Pine-Sol Multi-Surface Cleaner* (EPA Registration No. 5813-101), does not list pine oil as an active ingredient at all. Instead, the only AI listed is 1.75% glycolic acid. Even the MSDS for this product does not include pine oil on the list of ingredients it contains.[56]

Quaternary Ammonium Chloride Compounds ("Quats")

Quaternary ammonium chloride compounds are among the most commonly used type of active ingredient for disinfecting and sanitizing both non-food-contact and food-contact surfaces. This is largely because products formulated with "quats" are readily available, versatile and relatively inexpensive (particularly highly concentrated formulations). In addition, they typically offer very broad-spectrum efficacy and do not have the unpleasant odor of chlorine bleach-based products.

The primary downsides of quats include their health hazards – including, notably, asthma – and environmental impacts, their relatively long dwell time (typically 10 minutes), their incompatibility with other commonly used cleaning products, and their ability to corrode floor polish and other surfaces[57]. Many concentrated products containing quats require a wipe or rinse step after disinfection to protect human health and prevent sticky residues on treated surfaces that may contribute to antimicrobial resistance.

Health: All quaternary ammonium compounds are on AOEC's asthmagen list as respiratory sensitizers. This includes, but is not limited to, the following:

- Alkyl dimethyl benzyl ammonium chlorides (ADBACs) (CAS #8001-54-5)
- Benzalkonium chloride (CAS #139-07-1)
- Benzyl-C12-18-alkyldimethyl, chlorides (CAS #68391-01-5)
- Dialkyl methyl benzyl ammonium chloride (CAS #73049-75-9)
- Didecyl dimethyl benzyl ammonium chlorides (DDACs) (CAS #7173-51-5)
- Quaternary ammonium chloride compounds, not otherwise specified (NOS)

One quat compound, benzalkonium chloride, also carries the European Union REACH Directive "R43" designation, meaning "May cause sensitization by skin contact." However, other quats are not classified as skin sensitizers, and the National Institutes of Health concludes that benzalkonium chloride is a "rare" skin sensitizer[58].

The U.S. EPA classifies quats as "severe skin and eye irritants."[59,60] Moreover, at least one of the evaluated RTU product labels (*Professional Lysol Brand Disinfectant Antibacterial Kitchen Cleaner*) noted that, "prolonged or frequent skin contact may cause allergic reactions in some individuals."[61] The MSDS for the concentrated "quat" product evaluated for this report, Virex II/256 warns that it can cause corrosive effects to the nose, throat and respiratory tract; skin and eye burns; and permanent skin and eye damage, including blindness.[62] The pre-

diluted quat products evaluated had less serious acute health warnings; none were labeled as corrosive. For example, the Lysol product listed above has a label warning stating that it "causes substantial but temporary eye injury." The EPA-approved label for *Clorox Disinfecting Wipes,* another RTU quat product that was evaluated, states that it "causes moderate eye irritation." No warning for skin irritation or sensitization is given for this product, although it does tell users to "wash thoroughly with soap and water after handling." (Note: while this product label encourages parents to "be ready for school by including *Clorox Disinfecting Wipes* on your back to school shopping list," it also has the following warning: "Keep out of reach of children.")

Some surface disinfectants and sanitizers that contain quats but have a neutral pH are marketed as environmentally preferable products because they can replace quats that are caustic (i.e., with an extremely high pH of >12). In this assessment, all concentrated quats in this evaluation were labeled "corrosive" even if they had a neutral pH. For example, Rochester Midland's *Enviro Care Neutral Disinfectant*, which is a concentrated quaternary disinfectant with a pH of 7.2 to 8.2, has the following precautionary statement on its U.S. EPA-approved label and MSDS: "DANGER: Corrosive, Causes irreversible eye damage."[63,64] This is of particular concern because the product is packaged in a container that can allow direct contact with the concentrate. Conversely, none of the ready-to-use (RTU) quat products evaluated were labeled corrosive.

Although not on California's Prop 65 list as reproductive or developmental toxins, a June 2008 article in *Nature* highlighted a researcher who noted low fertility and small fetuses in mice that lived in cages cleaned with quaternary ammonium chloride compounds. In the presence of quaternary ammonium chloride salts, only 10% of female mice could conceive; a change to a different disinfectant solved the reproductive and developmental toxicity problems in the laboratory mice.[65]

Environment: Quats are highly toxic to fish and other aquatic organisms, according to the U.S. Environmental Protection Agency's RED for ADBACs and DDACs, two common categories of quats.[66,67] This toxicity is exacerbated by the fact that quats do not readily degrade; instead they tend to concentrate in sewage sludge when sanitizers and disinfectants are flushed down the drain or down toilets during the cleaning of restrooms. There is also concern about these compounds inhibiting the activity of denitrifying bacteria in sewage sludge that are necessary for the breakdown of biological materials.[68] They bind readily to soils, and have half-lives ranging from five months (low persistence) to five years (highly persistent) depending on the study referenced.[69,70,iii] In addition, studies have shown that certain quats contribute to antibiotic resistance in bacteria, including co-resistance and cross-resistance between quats and a range of other clinically important antibiotics and disinfectants.[71,72]

Efficacy: Quats typically have some of the highest claimed efficacies of the surface disinfectants and sanitizers, but their dwell time is relatively long (10 minutes). The U.S. EPA-approved label for the sample concentrated disinfectant product containing "quats" that was evaluated for this report (Virex II 256[73]) states the following: "When used as directed at a 1:256 dilution (1/2 oz. per gallon), this product contains 660 ppm of active quaternary germicide making it highly effective against a wide variety (broad-spectrum) of pathogenic microorganisms (including bacteria, antibiotic resistant bacteria, viruses, fungi, mold and mildew)." Specifically, this product has registered efficacy against 55 strains of bacteria as well as 12 strains of antibiotic resistant bacteria such as MRSA – although it does not have registered efficacy against *Mycobacterium bovis* (which can

[iii] All of the guideline studies in the environmental fate part of the ADBAC RED indicate that ADBAC is essentially stable in the environment, with half-lives up to five years in an abiotic environment. ADBAC is hydrolytically stable under abiotic and buffered conditions with a half-life ranging from 150 to 379 days, depending on pH. ADBAC is completely stable to decomposition catalyzed by light in pH 7 buffered aqueous solutions. However, the registrant prepared a review of the open literature, unpublished documents, and meeting proceedings to make the case to EPA that ADBAC would biodegrade quickly. They concluded that ADBAC had a biodegradation half-life of 13 days. EPA accepted this conclusion, but there are no data presented in the RED supporting this conclusion. ADBACs have high water solubility but bind strongly to soils.

cause TB). It has registered efficacy against 20 types of viruses and meets both the U.S. OSHA and California *Bloodborne Pathogen Standards* because it is kills HIV (with a one-minute dwell time) as well as HBV and HCV (with a 5-minute dwell time). Its label does not list efficacy against *Norovirus* (responsible for stomach flu) or *Rhinovirus* (which can cause the common cold), however. This product is registered as a fungicide, listing efficacy against athlete's foot fungus, mold/mildew and Candida (yeast).

The pre-diluted, ready-to-use liquid product that was evaluated, *Citrus Scent Professional Lysol Brand Disinfectant Antibacterial Kitchen Cleaner*, is a "germicide" that contains approximately 1% ADBAC quats, and is registered to kill far fewer pathogens than the concentrated product described above. This includes eight strains of bacteria, including MRSA, and five types of viruses, including influenza A (flu) virus and HIV, but not the other bloodborne pathogens (HBV or HCV). Similarly, this product "inhibits or controls" mold and mildew, but it does not claim to kill any fungi (including mold, mildew or athlete's foot fungus). It is a bacterial disinfectant and virucide with a 10-minute dwell time, and a "mildewstat" with a three-minute dwell time. This product kills HIV and is a non-food-contact surface sanitizer with a 30-second dwell time.[74]

Clorox Disinfecting Wipes, which contains an even lower percentage of quaternary ammonium chloride compounds (0.29%) than the Lysol RTU product described above, also has registered efficacy against eight strains of bacteria (but MRSA is not included). It disinfects against seven types of viruses, including influenza a (flu) virus, herpes, and HIV, but not the other bloodborne pathogens (HBV or HCV). It is not registered as a fungicide and does not claim to inhibit mold or mildew. Users are directed to "use enough wipes for treated surface to remain visibly wet for 4 minutes." This product is registered as a non-food-contact surface sanitizer against only the two test bacteria (Staphylococcus and Salmonella) with a 30-second dwell time.[75]

Quaternary ammonium chloride compounds are sometimes added to surface disinfectants and sanitizers to boost the efficacy of other active ingredients. During this review, the authors found several products containing quats as well as one or more of the following ingredients: citric acid, hydrogen peroxide, lactic acid, ortho-phenylphenol, pine oil, and thymol. In most of these products, the quats were listed as an additional active ingredient on the U.S. Environmental Protection Agency-approved product label. In at least two other cases, however, the quats were listed on the Material Safety Data Sheet (MSDS) for the product, but not on the product label as an AI. For example, *Oxyfect-H*,[76] which contains 1-5% quaternary ammonium chloride compounds (as well as H_2O_2), is marketed as a "peroxide hospital disinfectant cleaner"[77]. The manufacturer (Betco) claimed in a phone conversation that the quats are included in the formulation as a surfactant designed to improve the cleaning ability of the product.

Thymol

Thymol (CAS #89-83-8) is derived from the cooking herb thyme, and is a major component of thyme oil. Thyme oil is intentionally added to food and "generally recognized as safe" by the US Food and Drug Administration (FDA) and the U.S. EPA.[78] Nevertheless, products containing thymol are not recommended because this AI is a skin sensitizer and has other health concerns, particularly in concentrated formulations. It also has a relatively long dwell time (10 minutes for disinfection).

Health: In its pure form thymol is corrosive to the eyes and severely irritating to the skin and respiratory system. The concentrated product that was included in this evaluation (*Thymo-Cide*, which contains 13% of this active ingredient) has the following precautionary statement on its U.S. Environmental Protection Agency-approved label: "DANGER: Corrosive. Causes irreversible eye damage." In contrast, the ready-to-use liquid thymol-based product that was evaluated, Method's *Antibac Antibacterial Kitchen Cleaner*, which contains .05% thymol, states on its label that is non-irritating and non-corrosive.[79]

Thymol was listed as an asthmagen via respiratory sensitization (Rs) for a brief time in 2012, but it was removed in August 2012 and it is now listed with an R, which means there is currently not enough evidence to classify it as an asthmagen. (It is worth noting that thyme – the plant – is listed as a respiratory sensitizer (Rs) in the

AOEC database due to the incidence asthma after exposure to thyme dust in processing facilities.) In a pilot test of safer disinfectant products that was undertaken in several childcare centers by the San Francisco Department of Public Health, many users reported that they disliked the fragrance of thymol.

Thymol has been identified as a skin sensitizer in U.S. EPA's 2002 *Biopesticides Registration Action Document* (BRAD).[80] It does not pass the Green Screen review for reproductive toxicity or genetic toxicity, although the reliability of the studies cited is low.[81] Exposure to the concentrated thymol-based product included in this evaluation (Thymo-cide) points to potential central nervous system effects. Its U.S. EPA-approved label includes the following warnings: "Harmful if absorbed through the skin" and "Measures against circulatory shock, respiratory depression, and convulsion may be needed."[82]

Environment: Thymol degrades or dissipates fairly rapidly in the environment. The half-life for dissipation is 16 days in water and five days in soil. Volatilization is thought to be the primary pathway for dissipation.[83]

Efficacy: Most of the disinfecting and non-food-contact surface sanitizing products containing thymol as their only active ingredient that are approved for use in California have AI concentrations ranging from 0.05% (in ready-to-use products) to 13% (in concentrates). All of the sample products that were evaluated are disinfectants capable of killing bacteria, viruses and in at least one case, athlete's foot fungus and TB. Only the concentrated formulation evaluated *(Thymo-Cide*) is registered to kill antibiotic-resistant strains of bacteria such as MRSA. It is registered only as a disinfectant (not a sanitizer) with efficacy against five strains of bacteria, five types of viruses, *Mycobacterium bovis* (which can cause tuberculosis), and athlete's foot fungus. It does not meet either the US OSHA or California *Bloodborne Pathogen Standard* because it is only registered to kill HIV (in one minute) but not HBV or HCV.

The RTU product, Method's *Antibac Antibacterial Kitchen Cleaner*[iv] (which contains 0.05% thymol) claims disinfectant efficacy against five strains of bacteria, four types of viruses (e.g., influenza (flu) virus, ~~and~~ *Rhinovirus* (common cold) and HIV) with a 10-minute dwell time. With a 30-second contact time, this product is registered as a sanitizer for use on non-food-contact surfaces. No rinsing is required of either of the evaluated sample products.

Electrolyzed Water Devices

Electrolysis is chemical decomposition caused by passing an electric current through a solution containing ions. Electrolysis of water solutions can generate chemicals that have antimicrobial properties. There has been a recent upsurge in interest in devices claiming to use electrolytic processes to disinfect or sanitize surfaces. These are sometimes called "ionized water" devices by vendors.

There are two general categories of electrolyzed water devices:

1) Devices that require the addition of salt (NaCl) to the solution before electrolysis, such as the EcaFlo® Anolyte product (US EPA Reg. No. 82341-1).
2) Devices that use tap water, alone, such as the Activelon® and Ionator EXP® products.

Health: Type 1 devices produce hypochlorite ions, that is, a dilute chlorine bleach solution, which would account for the reported antimicrobial activity. One advantage of using such a device is that the user is never exposed to corrosive bleach concentrates, with their attendant skin and eye irritation hazards. However, in other respects, these devices seem to offer no advantage over chlorine bleach. Sodium hypochlorite, as well as chlorine gas and HCl, has been designated as asthmagens by the Association of Occupational and Environmental Clinics (AOEC), and would also have corrosive effects on some surfaces (see section on chlorine bleach above).

[iv] This product is also marketed as Seventh Generation's *Disinfecting Multi-Surface Cleaner.*

The chemical mechanisms at work in Type 2 devices remain unclear, and thus the health impacts are difficult to evaluate. Interviews with ActiveIon company representatives confirmed that no nitrate or chloride salts had been added to water solutions before they were electrolyzed and tested for antimicrobial activity. This means that the electrolyzed water from these devices would not contain hypochlorite ions as in Type 1 devices. Company representatives cited the role of "nanobubbles" in delaying the mixing of electrolytic products but did not have a definitive or scientifically documented theory to explain the claims of antimicrobial activity.

For this reason, the San Francisco Department of the Environment conducted tests of electrolyzed water for the presence of metal ions that could account for antimicrobial activity. Testing revealed that water from the devices contained hexavalent chromium, a potent genotoxic ion categorized as a human carcinogen and reproductive hazard[84]. While only three devices were tested[v] with San Francisco tap water, all devices released hexavalent chromium in small amounts[vi]. Preliminary calculations determined that this amount of hexavalent chromium would not pose a worker hazard under the OSHA "PEL" (permissible exposure limits[vii], however, it is unknown whether the substance would accumulate on surfaces.

Environment: The materials needed to generate the disinfectant in Type 1 devices are low-toxicity compounds (water and salt), which – unlike many chlorine products - can be safely stored and transported. As with bleach, no residual disinfectant or sanitizer remains on treated surfaces. While the portability of some of these devices is another desirable attribute, the use of batteries may have environmental disadvantages.

Efficacy: As previously mentioned, Type 1 devices produce a dilute chlorine bleach solution, which would account for reported antimicrobial activity. For Type 2 devices, ActiveIon commissioned lab tests that demonstrated a >99.999% reduction in *E. coli*, *Pseudomonas aeruginosa*, and *S. aureus*. However, Activeion had not conducted the testing with sufficient controls and replications to prove the IonatorEXP™'s effectiveness as a sanitizer[viii]. Furthermore, separate testing conducted by the Massachusetts Toxics Use Reduction Institute found little or no antimicrobial activity from Type 2 devices.

Lack of U.S. EPA oversight for antimicrobial devices: Because the IonatorEXP® is a device rather than an antimicrobial substance, it is not registered as a pesticide product by the U.S. EPA; consequently, its efficacy claims are not regulated. Device manufacturers are only required to have an establishment number from the U.S. EPA, and antimicrobial or other product claims are not reviewed, although "false or misleading" claims are prohibited. The relatively meaningless U.S. EPA establishment numbers are unfortunately easily confused with U.S. EPA product numbers[85].

In summary, Type 1 devices may conceivably be effective as antimicrobials, based on the presence of chlorinated electrolytic products. However, there is no U.S. EPA registration system available to confirm their efficacy for consumers, and the chronic health impacts are likely to be similar to the use of bleach. With Type 2 devices, the lack of a plausible mechanism casts additional doubt on their germ-killing capabilities, and the presence of chromium ions in the water may pose some risk.

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v One commercial IonatorEXP® device, one home use IonatorHOM® device, and a commercial ActiveIon® Pro device

vi Hexavalent chromium levels ranged from 68 – 349 ppb, with most falling near 100 ppb. The OSHA Permissible Exposure Level (PEL) for hexavalent chromium is 5μg/m3 for airborne exposures. The non-regulatory California public health goal for drinking water is 0.02 ppb, and the federal maximum contaminant level for total chromium is 50 ppb. Note that drinking water standards assume much greater exposures and are, therefore, not the most appropriate reference standards in this case.

vii Assuming the OSHA risk assessment breathing rate of 9.6m^3/workday and 120μg/L of Cr^{+6} (SF measurements), a worker would need to breathe in 0.4L/day to reach the 5 μg/m^3 PEL. Drowning occurs after inhaling 0.25-0.5 L.

viii At the same time, the U.S. EPA acknowledged that there is no evidence to prove that the IonatorEXP™ does *not* sanitize effectively.

Safer Sanitizers and Disinfectants

Although all surface sanitizers and disinfectants have risks, some active ingredients (AIs) appear safer for human health and the environment than others. As mentioned earlier, the U.S. EPA has not permitted the use of ecolabels on any registered pesticides (including surface sanitizers and disinfectants) that are offered for sale in the United States. While Green Seal and EcoLogo have developed certifications that cover disinfectant and sanitizing products, very few products have actually been certified to date.

1. EcoLogo, which is based in Canada and was recently acquired by UL Environment (ULE) has certified a few hydrogen peroxide antimicrobial cleaning products such as Accel Concentrate and Accel Tb, which are recommended in this report. While these products do not carry the ULE/EcoLogo label when sold in the U.S., the same products do so in Canada. Users can check the ULE/EcoLogo website to find disinfectants and disinfectant cleaners that have been certified by EcoLogo under its CCD-166 standard. (These products are noted in *Appendix A: List of Sample Safer Disinfectants and Sanitizers* of this report, below.) *Note: Many disinfecting products that are certified by EcoLogo do not meet San Francisco's health and environmental criteria because they contain quaternary ammonium chloride compounds (which are asthmagens) or thymol (which is a skin sensitizer).*

2. Green Seal, a third-party certifier that is based in the United States, included surface sanitizers and disinfectants in the scope of its July 2013 *GS-53: Specialty Cleaning Products* standard, although it does not have any products certified under that standard to date.

   Green Seal does list a few products that are certified to its GS-37 institutional cleaning products standard that have a dual labeling scheme. One example is *Alpha HP. Alpha HP Multi-Surface Cleaner* is a peroxide-based product carries Green Seal's eco-label (but no disinfecting or sanitizing claims) on its package and marketing materials. The exact same product, called *Alpha HP Multi-Surface Disinfectant Cleaner*, has the EPA-approved sanitizing and disinfecting claims on its package and marketing materials, but lacks the Green Seal eco-label. Such products are sometimes referred to as "co-labeled". Deciding which product to choose creates a dilemma for users that want to get credit for using a "green" certified product but need to use a registered disinfectant or sanitizer.

3. The U.S. EPA's Design for the Environment (DfE) Program has been conducting a pilot project since 2011 to identify safer sanitizing and disinfecting active ingredients and set up an approval process for the products that contain them, including adherence to DfE's other product screening methods. As of February 2013, DfE has approved the following active ingredients: (1) Citric acid; (2) Hydrogen peroxide; (3) L-Lactic acid; (4) Ethanol; and (5) Isopropanol. According to the DfE website, products composed of one or more of these active ingredients may be considered for the DfE logo. In addition, six antimicrobial cleaning products have been authorized to use the DfE logo. These six products include four that use lactic acid as their active ingredient and two the use citric acid. (These products are noted in *Appendix A: List of Sample Safer Disinfectants and Sanitizers* of this report, below.) For more information on the Pesticide DfE Program, go to http://www.epa.gov/pesticides/regulating/labels/design-dfe-pilot.html.

In light of the paucity of U.S. EPA-registered products that are verified as meeting any third-party environmental standards, this assessment uses multiple criteria to identify safer disinfectant and sanitizing active ingredients (see Evaluation & Coding Methods section above). The safer ingredients we identified include:

1. Caprylic acid
2. Citric acid
3. Hydrogen peroxide (H_2O_2), including stabilized and the proprietary "accelerated" versions (AHP™)

4. Lactic acid
5. Silver + citric acid (or hydrogen peroxide)[ix] [Limited Use]

Below is a summary of preferred active ingredients that are not carcinogens, reproductive toxicants, asthmagens, or skin sensitizers and do not have serious environmental concerns (with the possible exception of silver, which is recommended for limited applications but is persistent and has high aquatic toxicity). Sample safer alternative products representing each preferred active ingredient are detailed in *Appendix A: List of Sample Safer Disinfecting and Sanitizing Products.* Note that a complete review of all products containing each active ingredient was not possible, and for some categories there are many other products with similar active ingredients available. When feasible, Appendix A lists products with the same U.S. EPA registration number as those (with a different name) that were evaluated and recommended since they are required to have the same formulation. In addition, products that are certified by ULE/EcoLogo or approved in the Pesticide DfE Pilot Project are noted as such.

Caprylic Acid

Caprylic acid (CAS #124-07-2), also called octanoic acid, is not listed as an asthmagen or a skin sensitizer. Nevertheless, this active ingredient is highly acidic when formulated as a concentrate (pH = 1). Although the only caprylic acid-based product approved for use as a non-food-contact surface sanitizer or disinfectant in California is a concentrate that is labeled corrosive, it is recommended because it is packaged in a container that prevents exposure to this highly acid, concentrated solution. (Note: This product also contains up to 20% phosphoric acid, according to the MSDS, which contributes to its extremely low pH.) This healthcare-environment disinfectant is recommended for use despite its relatively long, 10-minute dwell time.

There are currently no pre-diluted RTU products with caprylic acid as the only active ingredient approved for use in California or the US. One caprylic acid-based RTU surface disinfectant (*Quantum Tb* by Ecolab) was registered by U.S. EPA until 2011.[86] This product is listed as "inactive" by the CA DPR.

Health: The representative concentrated caprylic acid-containing disinfectant evaluated is Ecolab's *65 Disinfecting Heavy-Duty Bathroom Cleaner*, which contains approximately 3% of this AI. It has the following warnings on its U.S. EPA-approved product label: "DANGER: Corrosive. Causes irreversible eye damage and skin burns."[87] The pH of the concentrate is 1 and its MSDS indicates that in addition to caprylic acid, it also contains 5-20% citric acid (which is not listed as an active ingredient) as well as 2% phosphoric acid.[88] The MSDS states that the diluted solution is "moderately irritating to the eyes". This product is designed as a dispensing-system concentrate, which means it only can be dispensed through dilution equipment. This promotes accurate dilution of the product and prevents users from coming into contact with the concentrated solution.

Environment: No environmental warnings are present on the labels or MSDSs of any of the evaluated products containing this AI, but some products evaluated contain phosphorus, which contributes to aquatic eutrophication

Efficacy: The concentrated product we evaluated (Ecolab's *65 Disinfecting Heavy-Duty Bathroom Cleaner)* is registered as a healthcare-environment disinfectant when it is diluted 6-8 ounces per gallon of water and left on the surface for 10 minutes. It claims efficacy against nine strains of bacteria (including MRSA), seven viruses (including influenza (flu) virus, rhinovirus (common cold) and HIV, but not the other bloodborne pathogens hepatitis A or B). It is also a registered fungicide against *Candida albicans* only, but not against athlete's foot fungus, mold or mildew. According to the U.S. EPA-approved label for this product, after the requisite dwell time, users are supposed to wipe the surface with a damp cloth or sponge, and then rinse the surface with potable

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[ix] The U.S. EPA Design for the Environment Program's pilot project has excluded silver and caprylic acid, but includes ethanol and isopropyl alcohol, AIs that we did not evaluate. Silver is recommended here only for very limited uses.

water. The need for these additional steps at the end of the disinfecting process may make this product less convenient to use as a disinfectant than other alternatives.

When this product is diluted further, three ounces per gallon, and left on the surface for five minutes, it is a registered non-food-contact surface sanitizer against two of the test bacteria: *Staphylococcus aureus* and *Enterobacter aerogenes*. No rinsing is required after this sanitizing process.

Citric Acid

Over a dozen citric acid-containing non-food-contact surface sanitizers and disinfectants are registered for use in California. The concentration of this active ingredient in these products ranges from 0.6% to 8%. Almost all are ready-to-use (RTU) formulations; and even those identified in this evaluation that were listed as concentrates are formulated to be diluted only when used as a sanitizer or cleaner, but must be used full-strength to qualify as a disinfectant. One of example of this is *Comet Disinfecting Bathroom Cleaner,* which is a disinfectant when undiluted, a sanitizer when diluted 1:4, and a daily cleaner when diluted 1:9 to 1:19.[89]

Health: Citric acid (CAS #77-92-2) is a recommended active ingredient because it is not listed as a substance that causes asthma, reproductive or developmental harm, or skin sensitization. However, not surprisingly, many citric acid-based products are highly acidic (pH between 2 and 4) and report mild to moderate irritation to the eyes, skin and respiratory system..

Environment: Citric acid, in the concentrations found in antimicrobial cleaning products, is not known to have any aquatic toxicity or other environmental risks.

Efficacy: The efficacies of currently U.S. EPA-registered and CA DPR-approved citric acid-based antimicrobial surface cleaners vary widely among products. Some are only bacterial disinfectants while others can kill bacteria, viruses and, in some cases, athlete's foot fungus. Most (but not all) have a 10-minute dwell time for disinfection and a 5-minute dwell time for non-food-contact surface sanitizing, with some variation depending on the product and the organisms targeted.

All of the surface sanitizers and disinfectants with citric acid as their only active ingredient that were included in this evaluation are recommended. Products that contain other active ingredients such as quats, thymol, and pine oil in addition to citric acid are not recommended – with the exception of products that contain citric acid and silver, which is recommended for limited applications and discussed in detail below.

Below is an overview of the citric acid-containing non-food-contact surface sanitizers and disinfectants that are recommended in this assessment:

- *Clean-Cide*[90] is a ready-to-use product by Wexford Labs that contains 0.6% citric acid. It is available a both a liquid and wipes. The reviewed product is the liquid, which is registered as healthcare-environment disinfectant with efficacy against eight strains of bacteria (including MRSA), 10 viruses (including HIV), athlete's foot fungus, and the organism that causes TB, with a 5-minute dwell time. With a 10-minute dwell time, it also kills Hepatitis B virus (HBV), which means it meets the federal (OSHA) and California *Bloodborne Pathogen Standards*, and one additional bacterial strain. This product is also registered as non-food-contact surface sanitizer with a 60-second dwell time, although it claims efficacy against two test bacteria only.

- *Comet Disinfecting Bathroom Cleaner*, which contains 6% citric acid as its only active ingredient, is registered as healthcare-environment germicide with efficacy against 17 strains of bacteria (including antibiotic-resistant organisms such as MRSA) and 10 viruses (including the two requisite bloodborne pathogens HIV and HBV as well as Norovirus). It is not registered as a fungicide or tuberculocide. To disinfect, users must apply it full-strength for 10 minutes, then rinse or wipe the surface clean. This

product is also registered as a non-food-contact surface sanitizer (with efficacy against two test bacteria only) when diluted 1:4, allowed to stand on the surface for 5 minutes, and then rinsed or wiped off.[91]

- Method's *Antibac Kitchen Cleaner*[92] is an RTU product that contains 5% citric acid as its only active ingredient. As a disinfectant, this product claims efficacy against only 4 types of bacteria (E. coli, Enterobacter, Salmonella, and Staph.) and 2 viruses (*Rhinovirus* and Influenza A (flu) virus). It is also registered as non-food-contact surface sanitizer with efficacy against two test organisms only with a 5-minute dwell time.

- Two DFE-approved citric acid-based disinfectants (Spartan's *Green Solutions Restroom Cleaner,* [93] which contains 8% citric acid, and *Comet Bathroom Cleaner With Disinfectant*[94]) are also among the recommended disinfecting products. However, these RTU products have a relatively long (10-minute) dwell time and more limited efficacy than the products listed above. For example, *Comet Bathroom Cleaner With Disinfectant* is a bacterial disinfectant only (i.e., it has no registered efficacy against any viruses or fungi.) Spartan's *Green Solutions Restroom Cleaner* (also called *Consume Bio-Bowl)* is registered as a disinfectant against three types of bacteria and two viruses (Influenza A (flu) virus and *Herpes Simplex 2* virus), while it lacks efficacy claims against HIV and most other viruses as well as fungi. Neither of these products are registered as a non-food-contact surface sanitizer.

Hydrogen Peroxide (H_2O_2)

This active ingredient category includes products containing H_2O_2 (CAS #7722-84-1) as their only active ingredient as well as products containing a stabilized form of hydrogen peroxide called "Accelerated" Hydrogen Peroxide (AHP™). AHP™ is a "patented synergistic blend" developed by the Virox company that claims to "dramatically increase the germicidal potency and cleaning performance" of H_2O_2. Products containing AHP™ typically contain a relatively low concentration of H_2O_2 (approximately 0.5% in ready-to-use solutions and 4.25% in concentrates) as well as phosphoric acid, surfactants, and other "inert" ingredients.[95]..

Products containing hydrogen peroxide as their only active ingredient are recommended because this AI is not considered an asthmagen, carcinogen, reproductive toxin, or skin sensitizer. Products containing hydrogen peroxide include both concentrates and ready-to-use formulations. Many are registered only as bacterial sanitizers and virucides (not bacterial disinfectants). At least one line of products, which is marketed to healthcare facilities, has efficacy against a broad spectrum of bacteria, viruses and fungi.

Some products marketed as hydrogen peroxide disinfectants contain quaternary ammonium chloride compounds (quats), silver or other antimicrobial compounds. One example is Betco's *Oxyfect-H Peroxide Disinfectant Cleaner,* which lists H_2O_2 as the only active ingredient on its product label[96], while its MSDS lists quats as additional ingredients.[97] Be sure to check both the product's U.S. EPA-approved label[98] and MSDS before purchase.

Health: Hydrogen peroxide is not classified as an asthmagen by the AOEC, and the European Union does not consider it a skin sensitizer. While H_2O_2 is not on the State of California's Prop 65 list of chemicals known to cause cancer, birth defects or other reproductive harm, there is some suspicion that it could have carcinogenic impacts. The American Conference of Governmental Industrial Hygienists (ACGIH) has concluded that hydrogen peroxide is a "confirmed animal carcinogen with unknown relevance to humans",[99] and an EU study concluded that H_2O_2 is a mutagen and genotoxicant in some in vitro tests but that "the available studies are not in support of significant genotoxicity/mutagenicity of H_2O_2 under in vivo conditions."[100] Hydrogen peroxide is a natural byproduct of metabolic processes, and most animals produce enzymes that break down peroxides into harmless byproducts.[101]

Concentrated H_2O_2 is highly reactive and quite dangerous. While the chemical is corrosive to the eyes, skin and lungs at levels of 50% and above, in its diluted form it is relatively benign. (Most hydrogen peroxide-containing

products have ≤1% of this active ingredient in their diluted state, and concentrates rarely exceed 5%) Both the ready-to-use (RTU) and the concentrated products, once diluted, have very few, if any, health warnings. Some labels claim mild skin irritation and mild to moderate eye irritation, while others do not; this could also stem from the products' relatively low pH (~1-3). Nevertheless, it is important for users of concentrated H_2O_2 products to choose products that are designed to work with automatic dilution systems in order to prevent worker exposure to concentrated solutions.

Environment: The RTU and concentrated H_2O_2 products reviewed in this assessment have very few, if any, environmental warnings. Hydrogen peroxide is not toxic to aquatic species and it rapidly degrades in the environment into oxygen and water. Some AHP™ products are stabilized with phosphoric acid; if disposed down the drain, they can add phosphates to the aquatic environment, which can contribute to eutrophication.

Efficacy of H_2O_2: Some of the evaluated antimicrobial products containing unstabilized H_2O_2 as their only active ingredient are registered as non-food-contact surface sanitizers (not disinfectants) that are also effective against viruses. For example, Envirox's *H_2Orange$_2$ Concentrate 117*[102] (which contains 3.95% H_2O_2) is registered as a sanitizer with efficacy against six bacterial strains. As a virucide, it claims to kill HIV and Influenza (flu) virus[x], when it is diluted 10 ounces per gallon and left on the surface for 5 minutes. This product is meant for use with a dispensing system. *H_2Orange$_2$ 120 Ready to Use*[103] (which is also called *H2Orange2 One* and contains 1% H_2O_2) has similar efficacy as a bacterial sanitizer and virucide, but also kills athlete's foot fungus. It also has a 5-minute dwell time.

Spartan's *Peroxy II FBC Antibacterial Foaming Bath and Surface Cleaner* is another RTU product that contains 2.05% H_2O_2 (and lists citric acid as a non-active ingredient on its MSDS). It sanitizes non-food-contact surfaces in 2 minutes, claiming efficacy only against the two test bacteria. It is not registered as a bacterial disinfectant, virucide or fungicide.[104]

A hydrogen peroxide disinfectant that has recently showed up on supermarket shelves is called *Lysol Power & Free Multi-Purpose Cleaner With Hydrogen Peroxide.* In contrast to several of the other H_2O_2 products described above, it is a registered bacterial disinfectant but not a sanitizer. This RTU cleaner (which is available as a liquid and wipes) contains approximately 1% hydrogen peroxide as its only active ingredient – although the MSDS also lists up to 1% citric acid. It has a 10-minute dwell time with registered efficacy against 6 strains of bacteria (gram positive and negative, including MRSA) and 5 viruses (including those responsible for colds and flu), but not any bloodborne pathogens (HIV, HBV or HCV). It is also a registered fungicide with efficacy against athlete's foot fungus.[105]

In contrast, a product called *Clorox Healthcare Hydrogen Peroxide Disinfectant Cleaner*[106] is a ready-to-use disinfectant containing 1.4% H_2O_2 that makes claims against a much wider range of pathogens. This product, which is available as a liquid spray and wipes, has a very attractive one-minute dwell time and claims efficacy against over 20 strains of bacteria (including MRSA and other antibiotic-resistant strains of *Staphylococcus*), 18 viruses (including three bloodborne pathogens: HIV, Hepatitis B and C, as well as Herpes Simplex Types 1 and 2, Influenza (flu) virus, and *Norovirus*). It also kills athlete's foot fungus and *Candida albicans* in three minutes and is effective against TB in four minutes.

Like chlorine bleach, some hydrogen peroxide-based antimicrobial products can wear away surfaces such as metal and floor polish, especially if used regularly. Therefore, H_2O_2-based antimicrobial products should be used primarily on tile floors, porcelain sinks, and on other compatible surfaces unless they are highly diluted. Unlike with bleach, however, no rinsing is required of any of the evaluated sample products unless they are used on

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[x] The U.S. EPA-approved label for *H2Orange2 Concentrate 117* states that this product also kills Herpes Type 2 and Hepatitis B virus. However, a fact sheet published by the manufacturer of this product, Envirox, notes that these virucidal claims may not be made in California. This fact sheet can be accessed at http://enviroxclean.com/docs/Literature/1170411ONESHEET.pdf.

food-contact surfaces.

Efficacy of AHP™: Products containing Accelerated Hydrogen Peroxide™ tend to be effective at killing a broader spectrum of pathogens with a shorter dwell time than products containing a similar amount of unstabilized hydrogen peroxide. One of the evaluated AHP™-containing products, *Oxivir Five 16*, is a healthcare-environment disinfectant with efficacy against 17 strains of bacteria (including several antibiotic-resistant strains such as MRSA), 17 viruses (including the bloodborne pathogens HIV, HBV and HCV as well as influenza (flu) virus, Norovirus, and Herpes), and athlete's foot fungus. This concentrated product, which contains 4.25% H_2O_2, and is diluted 1:16 (one cup per gallon of water), has a dwell time of five minutes for all pathogens except mold and mildew, which takes 10 minutes to kill. *Oxivir Five 16* offers users additional versatility because it is registered as a non-food-contact surface sanitizer (against seven strains of bacteria) when diluted 1:128 (one ounce per gallon) and at 1:256 it can be used as a non-disinfecting general purpose cleaner. [107]

Another concentrated AHP-containing product, *Alpha-HP Multi-Surface Disinfectant* (EPA Reg. No. 70627-62[xi]) is a more cost-effective disinfectant than Oxivir Five 16. While both products contain 4.25% H_2O_2 (as AHP™), Alpha-HP is diluted 1:64 (rather than 1:16). The trade-off is that it has a more limited registered efficacy and a longer, 10-minute, dwell time to kill bacteria. Nevertheless, it is registered to kill seven strains of bacteria (including MRSA) in five minutes and 14 viruses including all three bloodborne pathogens (HIV, HBV and HCV) as well as *Herpes Simplex 2*, *Norovirus* and *Rhinovirus* in 10 minutes. This product is not registered as a fungicide; so, it is not a good choice for addressing problems associated with athlete's foot fungus, mold or mildew. Like *Oxivir Five 16*, *Alpha-HP Multi-Surface Disinfectant* is registered as a non-food-contact surface sanitizer when it is diluted 1:128 and left on the surface for three minutes. When diluted 1:256 it can be used as a general-purpose cleaner without any antimicrobial claims.[108] Both AHP™ products above are sold as part of closed loop dispensing systems, which do not permit worker exposure to the concentrate.

One AHP™-containing ready-to-use (RTU) product that was evaluated for this report, *Oxivir Tb*, has an even shorter disinfecting dwell time (one minute) against a wide array of bacteria (12 strains, including MRSA) and viruses (14 types including the bloodborne pathogens HIV, HBV and HCV, as well as the viruses that can cause colds (*Rhinovirus*), flu (*Influenza*), stomach flu (*Norovirus*), and herpes). It is also registered as a tuberculocide with a five-minute contact time, and in 10 minutes it kills athlete's foot fungus (although not other types of fungi such as mold or mildew). This product is also a non-food-contact surface sanitizer with efficacy against seven types of bacteria (including MRSA) with a short 30-second dwell time.[109] The use of a pre-diluted disinfectant can be expensive; however, its advantages of high efficacy and short dwell time – combined with the absence of carcinogens, asthmagens, and skin sensitizers – has made it an attractive option for many institutional facilities, particularly childcare centers.

Lactic Acid

There are only about a dozen non-food-contact surface sanitizing and/or disinfecting products containing lactic acid (CAS # 50-21-5) as their only active ingredient registered for use in California. All of them are available only as ready-to-use formulations with lactic acid concentrations ranging from 0.18% to 7.2%. There are no concentrated lactic acid disinfectants or non-food-contact surface sanitizers registered for use in California, making them less cost effective for institutional use.

Three of these products are approved by the U.S. EPA's Pesticide Design for Environment (DfE) Program.

[xi] Another similarly named product, *Alpha HP* (U.S. EPA Registration No. 70627-54), has been replaced by the product that was evaluated for this report. There may be other products with a different name using this older EPA registration number, which is still active, available in the marketplace. Those products claim more limited efficacy than *Alpha-HP Multi-Surface Disinfectant Cleaner with EPA Registration* No. 70627-62).

These include:

- *Lysol Brand III Disinfecting All Purpose Cleaner* (U.S. EPA Reg. No. 777-100). This RTU product contains 3.2% lactic acid and is a health-care environment disinfectant.

- *B Cleaner* by International Consolidated Business (U.S. EPA Reg. No. 88472-1). This RTU product contains 3.7% lactic acid and is a registered disinfectant with efficacy against three bacteria (*Pseudomonas*, *Salmonella*, and *Staphylococcus*) in five minutes and a non-food contact surface sanitizer in one minute. Two products that utilize this registration number in California are *Bright Green Disinfecting All Purpose Cleaner* (88472-1-ZA-89054) and *Bright Green Disinfecting Bathroom Cleaner* (88472-1-AA-89054).

- *Toilet Bowl Cleaner* by International Consolidated Business (U.S. EPA Reg. No. 88472-2). This RTU toilet bowl cleaner contains 7.2% lactic acid and is registered as "a limited disinfectant against bacteria of intestinal origin" (i.e., gram-negative bacteria including salmonella, pseudomonas and rotavirus)" but no gram-positive bacteria such as *Staphylococcus aureus*, viruses or fungi. The product that utilizes this registration number in California is *Bright Green Antimicrobial Toilet Bowl Cleaner.*

Health: Lactic acid does not appear to pose chronic health risks. It is not a carcinogen, a reproductive or developmental toxin, an asthmagen nor a skin-sensitizing agent. The evaluated products produce slight to moderate eye and skin irritation.

Environment: Lactic acid poses no risks to the environment according to the product labels, MSDSs, and active ingredient information reviewed..

Efficacy: Each of the two sample products is registered as a disinfectant and non-food-contact surface sanitizer, depending on the dwell time used. Lactic acid disinfectants claim relatively poor efficacy. For example, *Windex Multi-Surface Antibacterial,*[110] as its name implies, is a *limited-efficacy* disinfectant that is registered as effective against three bacteria only (no viruses or fungi) with a five-minute dwell time. Its sole active ingredient is 0.18% lactic acid. (Note: This product lists 1-5% isopropyl alcohol on its MSDS[111], which may boost its efficacy even though it is not listed as an active ingredient on the U.S. EPA-approved label for this product.)

Lysol Brand III Disinfecting All Purpose Cleaner,[112] which has significantly more lactic acid (3.2%), is registered against more organisms but has a longer 10-minute dwell time. It is a disinfectant that can be used in healthcare environments, but it is registered to kill only six bacteria (such as *Staphylococcus* and *Salmonella*) and four viruses (including influenza). It does not claim efficacy against MRSA or any fungi. In addition, neither of these products is registered against HIV or Hepatitis B or C viruses; therefore, they do not meet the suggested efficacy for use against bloodborne pathogens as referenced in the *California Bloodborne Pathogen Standard.*[127,128]

As non-food-contact surface sanitizers, lactic acid-containing products typically have a very short dwell time. *Windex Multi-Surface Antibacterial*[xii], for example, has a notably short 10-second dwell time with registered efficacy against four bacteria (but no other pathogens). Similarly, *Lysol Brand III Disinfecting All Purpose Cleaner* is a registered non-food-contact surface sanitizer with efficacy against three bacteria (but no other pathogens) within 30 seconds.

[xii] Note: In addition to approximately 1% lactic acid, this product contains up to 5% isopropyl alcohol as a non-active ingredient, which may boost its efficacy.

Silver

Silver is found in non-food-contact surface sanitizers and disinfectants, usually in combination with other active ingredients. Two of the California DPR-approved products we evaluated (*Critical Care* and *Pure Hard Surface*) are ready-to-use (RTU) products with different EPA registration numbers but the same formulation: 0.003% ionic silver (not nano-silver) and 4.84% citric acid. A third product, Core Products Company's *Hydroxi Pro Force D,* is another RTU formulation that contains 0.01% ionic silver plus 5% hydrogen peroxide. Because these solutions are pre-diluted and often packaged in a spray bottle, they are not likely to be cost-effective for disinfecting floors and other large surfaces. Their notable advantage is their efficacy against a wide range of bacteria (including MRSA) and viruses, along with up to 24-hour residual activity on a treated surface. However, they are more expensive than most other products and have elevated water quality concerns. Therefore, they may be most valuable for treating touch-point surfaces such as sink faucets, doorknobs, and toilet handles during outbreak or other high-alert situations when other products with fewer environmental concerns but lower efficacy are not sufficient.

Health: Silver has low toxicity to humans, and most silver that is ingested is rapidly excreted. Although exposure to high doses of silver can cause lung and kidney lesions or mild allergic reactions such as rashes, swelling and inflammation, the low levels of silver present in these surface disinfecting products is not anticipated to present the same risks. All of the products containing silver ions and citric acid that are registered by the U.S. EPA and carry a CAUTION signal word on their label.[9] The sample disinfecting products containing silver and citric acid are mild skin and eye irritants with a highly acidic pH (2.0).[10] The evaluated RTU product that contains silver and hydrogen peroxide, carries the same CAUTION signal word but slightly stronger health warnings. For example, it is considered moderately irritating to the eyes, skin and respiratory system, according to the MSDS for this product.[113]

Silver ions and citric acid are not classified as respiratory sensitizers or other types of asthmagens by the AOEC or other sources. Silver is not known to have human carcinogenic potential and does not appear to be a mutagen, according to the U.S. EPA RED for this AI. Silver is not listed by the State of California as a developmental or reproductive toxicant, and no other sources reviewed indicated that silver causes reproductive or developmental toxicity.

Environment: Some silver salts are very highly toxic to fish and other aquatic organisms, and silver is listed as a priority pollutant in the Clean Water Act.[114] When entering the waste water system or natural waterways, silver may combine with other ions such as chloride, nitrate, or sulfur, sometimes increasing its toxicity and availability to marine organisms.[115]

As inorganic metal compounds, silver ions persist once released into the environment. The toxicity and bioaccumulation potential of silver are very low, with biomagnification very low in herbivores and with no evidence of biomagnification in carnivores.[116,117] Silver is considered persistent but not bioaccumulative by Environment Canada based on the *Canada Domestic Substances List*[118]. Silver does biomagnify somewhat, however, in plants and bivalves (such as clams, to which it is toxic and inhibits reproduction).[119] While these products are not likely to contribute significantly to the silver load in wastewater or sewage sludge at current use levels, the increasing use of silver as a biocide overall warrants considering how this product may contribute to the silver load in discharge waters. For these reasons, we restrict our recommendation for silver-based disinfectants to exceptional public health circumstances.

Efficacy: Disinfecting products containing silver and either citric acid or hydrogen peroxide have registered efficacy against a wide range of bacteria, viruses and fungi, with dwell times ranging from 30 seconds to 10 minutes. They are particularly effective at killing bacteria such as *E. coli, Salmonella*, and *Staphylococcus*, including antibiotic resistant strains such as MRSA. They can be particularly useful in the event of outbreaks of MRSA, influenza (flu) virus, or athlete's foot fungus, since the residue from these products does not need to be

rinsed off and can continue working as a disinfectant for up to 24 hours.

Although all the silver + citric acid products have the same percentage of active ingredients, they vary in claimed efficacy and dwell time. For example, *Pure Hard Surface* (EPA Reg. No. 72977-5) claims efficacy against 14 strains of bacteria (including MRSA in two minutes), 16 viruses (including HIV, HBV, and HCV in one minute), and athlete's foot fungus (in five minutes).[120] Consequently, it is appropriate for use under the recommendations of the *California Bloodborne Pathogen Standard*. In contrast, *Critical Care (EPA Reg. No. 72977-3)*[xiii] is registered against 11 bacterial strains (including MRSA in two minutes), nine viruses (including HIV, but not HBV or HCV, with dwell times ranging from 30 seconds to 10 minutes) and athlete's foot fungus in 10 minutes).[121] Users should check the label for the efficacy and application instructions of specific products.

Core Products Company's *Hydroxi Pro Force D*, which contains silver and hydrogen peroxide, is a healthcare-environment disinfectant with a 10-minute dwell time. It kills seven types of bacteria (including MRSA), five viruses (including HIV, Influenza (flu) virus, and Rhinovirus (the common cold virus)), and athlete's foot fungus. It also prevents the growth of (but does not completely kill) mold and mildew. (Note: This product is also registered under the name *Sanosil S010*, EPA Reg. No. 4526-1.)[122]

Neither of the two products that contain silver and citric acid is registered as a non-food-contact surface sanitizer. At least one product – *Pure Hard Surface* – is registered as a food-contact surface sanitizer with a one-minute dwell time. *Hydroxi Pro Force D*, is registered as a non-food-contact surface sanitizer (against an unspecified number of bacteria) with a five-minute dwell time.

Promising Devices

Microfiber Cloths and Mops

Microfiber products do not kill germs, but are useful tools because of their enhanced cleaning ability – and effective cleaning can eliminate the vast majority of microbes on surfaces. Microfibers are densely constructed, polyester and polyamide (nylon) fibers, that are approximately 1/16 the thickness of a human hair. The positively charged microfibers attract dust (which has a negative charge) and are more absorbent than a conventional, cotton-loop mop. Microfiber materials also can be wet with disinfectants. They can reduce use of water and cleaning chemicals. They lessen physical strain, and one case study from the University of California Medical Center documented a reduction in workers compensation claims.[123] Because microfiber cloths attract more dust, particles, and microbes than a string mop (95% versus 68% according to an U.S. EPA case study on cleaning practices at the University of California, Davis Medical Center),[124] they are a preferred option for pre-cleaning. When used before an antimicrobial product, microfiber mops and cloths are expected to boost efficacy against target organisms. Because microfiber mop covers are changed after every one or two rooms, the risk of cross-contamination between areas is greatly reduced or eliminated, which is particularly important in a medical facility. However, because they only reduce bacterial populations by 95% when used alone, they are not a complete replacement for sanitizers or disinfectants.

Steam cleaning

Some steam cleaning devices are marketed for sanitizing or disinfecting surfaces, and show promise as a non-chemical approach for some situations. Hospitals have long used steam for sterilizing equipment, and there is significant scientific documentation of steam's effectiveness in killing microbes.[125] Most steam cleaning machines do not require the use of chemicals, although the high temperatures involved may affect certain

[xiii] Critical Care uses the EPA Registration No. 72977-3, which was originally provided to a product called *Axen 30 Disinfectant, Virucide and Fungicide*. Other products using this EPA registration number that are approved for use in California include PureGreen24 and Germ Control 24.

surfaces. Steam has the potential to cause serious burns, but has no other known health or environmental impacts. In routine use, there are some logistical problems with steam, for example, the heat may set off fire alarms in some cases.

A variety of steam cleaning devices is available: For example, the "Thermal Accelerated Nano Crystal Sanitation (TANCS®) Steam Vapor System" by Advanced Vapor Technologies LLC claims a 99.999% reduction in all microbes tested after seven seconds of treatment[126] . Because the US EPA does not regulate pesticidal devices, however, there is no standardized, ready reference for efficacy. As such, it was beyond the scope of this report to compare the antimicrobial efficacy of specific steam cleaning products. A study currently underway in Massachusetts may soon shed more light on this technology.[xiv]

Surface Compatibility

Not all antimicrobial products are compatible with all surfaces. Table 2 below lists each active ingredients' surface incompatibilities based on information in the EPA-approved label and/or the MSDS of the evaluated products. It is important to note that the information reported for each active ingredient in the table may not apply to every evaluated product.

Table 2. Potential surface incompatibilities for disinfectant active ingredients

ACTIVE INGREDIENT	SURFACE INCOMPATIBILITY
Caprylic Acid	Not for use on PVD-coated surfaces or soft metals. Reactive with metals.
Citric Acid	Do not use on marble, brass or varnished metals.
Hydrogen Peroxide	Not recommended for use on aluminum, wood, natural stone, porous plastic, rubber. Corrosive to metals.
Hydrogen Peroxide, Accelerated (AHP)	Not recommended for use on copper, brass, granite, marble or zinc.
Lactic Acid	Not recommended for use on finished wood, floors/ surfaces, marble, brass or acrylic plastic (including outdoor patio furniture).
Ortho-Phenylphenol (OPP)	Rinsing is not necessary except on floors are to be waxed or polished.
Peroxyacetic Acid (PAA)	Avoid metals.
Pine Oil	Not recommended for use on unfinished, unsealed, unpainted, waxed, oiled, or worn wood flooring.
Quaternary Ammonium Chloride Compounds (Quats)	Not recommended for use on finished wood floors, marble, copper, aluminum, brass, painted surfaces, fabric and acrylic plastic. Stainless steel may become damaged from prolonged exposure.
Silver + Citric Acid	May be slightly incompatible with aluminum and copper metals after prolonged exposure. Product is compatible with most metals including stainless steels."
Silver + Hydrogen Peroxide	Do not use on polished wood, painted surfaces, leather, rayon fabrics, or acrylic plastics.
Sodium Hypochlorite (Chlorine Bleach)	Prolonged contact with metal may cause pitting or discoloration. Do not use with copper and iron. Will corrode aluminum. May cause damage to fabric/clothing (bleaching).
Thymol	Prolonged soaking may cause damage to metal instruments.

[xiv] Toxics Use Reduction Institute and the Univ. of Massachusetts/Lowell Clinical Science Lab are collaborating on this project; see http://www.turi.org/Our_Work/Green_Cleaning_Lab/Does_It_Clean/Green_Disinfection

The information in the table above has been aggregated by active ingredient (AI). The degree to which products containing each of these AIs (or combinations of AIs) corrode, discolor, or otherwise negatively impact various surfaces can be influenced by several factors, including the percentage of the AI and other ingredients in the formulation, the amount of time the product is left wet on the surface, the decision to wipe or since the disinfecting or sanitizing residue off the surface after use, and the frequency of application.

Chemical Compatibility

Surface disinfectants and sanitizers should not be mixed with each other or other cleaning chemicals. Doing so can sometimes cause dangerous – and potentially lethal – gases to form. Table 3 below lists each active ingredients' chemical incompatibilities based on information in the EPA-approved label and/or the MSDS of the evaluated products. It is important to note that the information reported for each active ingredient in the table may not apply to every evaluated product.

Table 3. Potential chemical incompatibilities for selected active ingredients

ACTIVE INGREDIENT	CHEMICAL INCOMPATIBILITY
Caprylic Acid	Mixing with bleach or other chlorinated products will cause chlorine gas.
Citric Acid	Do not mix with chlorine bleach or other cleaning products as irritating fumes may be formed.
Hydrogen Peroxide	Do not mix with bleach or other household products.
Hydrogen Peroxide, Accelerated (AHP)	Do not mix with ammonia, bleach, or other chlorinated compounds. May react to release hazardous gases.
Lactic Acid	Do not mix with bleach or other household chemicals.
Ortho-Phenylphenol (OPP)	Slightly reactive with acids.
Peroxyacetic Acid (PAA)	Avoid heat and contact with combustible materials. Not flammable, but may cause spontaneous ignition with oxidizing agents.
Pine Oil	Flammable. Avoid heat, sparks, open flames or other sources of ignition. Do not mix with other chemicals.
Quaternary Ammonium Chloride Compounds (Quats)	Mixing with sodium hypochlorite may release small amounts of formaldehyde gas. Do not mix with bleach or other household products.
Silver + Citric Acid	Incompatible with ammonia and hydroxides.
Silver + Hydrogen Peroxide	Incompatible with oxidizing and reducing agents.
Sodium Hypochlorite (Chlorine Bleach)	Reacts with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acids, or ammonia containing products to produce hazardous gases, such as chlorine and other chlorinated species.
Thymol	Incompatible with strong alkalis, cationics, nonionics.

Special Scenarios

For information on active ingredients and sample products effective against bloodborne pathogens (HIV and HBV, for cleaning up blood and other bodily fluid spills), athlete's foot fungus (for use in locker rooms, gymnasiums, and showers), and Norovirus, refer to Appendix C.

Conclusions

Safer Active Ingredients

In this alternatives analysis, a dozen active ingredients (AIs) – or combinations of AIs – have been evaluated for potential health and environmental risks. From a health perspective, the most serious health risks associated with surface disinfectants and sanitizers appear to be respiratory effects (asthma) and acute toxicity risks from handling corrosive concentrates, which can cause severe skin burns or permanent eye damage. Acute toxicity can be mitigated through the use of closed loop dilution systems, which prevent exposures to the concentrated products; however, asthmagens are not so easily avoided. There are also other chronic effects associated with some products that are known carcinogens and skin sensitizers. The AIs that fall into these categories include sodium hypochlorite (chlorine bleach), peroxyacetic acid, and quaternary ammonium chloride compounds (quats), which are all respiratory sensitizers; pine oil and thyme oil, which both skin sensitizers, and ortho-phenylphenol, which is a carcinogen. Among the AIs that are not known to cause cancer or asthma are hydrogen peroxide, citric acid, lactic acid, caprylic acid, and silver plus citric acid. Silver, however, is both expensive and toxic to aquatic organisms, making it a poor choice for large-scale use.

Efficacy

After comparing a variety of surface disinfectants and sanitizers,, we have determined that there are some safer products available with preferable health and environmental profiles and equivalent or better efficacy than the traditional, more toxic products. The results are detailed in Appendix A, and a full analysis of representative concentrated and RTU products for each active ingredient are covered in detail in a supplemental spreadsheet available upon request.

Future Challenges

There are two sets of important data missing from these analyses: *Full ingredient disclosure* of chemicals in each of the analyzed products, and *standardized efficacy data on pesticidal devices* such as steam cleaners and electrolyzed water devices.

Full ingredient disclosure is critically important to any analysis of cleaning product safety, and is a central theme of various efforts underway to reform national and state chemicals policies. Until these reforms are successful, third-party certification programs and the US EPA's Design for the Environment Program have key roles to play, since - unlike the general public - these programs have access to full ingredient lists.

As discussed earlier, pesticidal devices are essentially unregulated at the federal level. Consumers therefore have no way of easily evaluating devices' effectiveness, since there is no accepted standard set of tests and protocols. The next best thing is a broad comparison of devices, using standardized protocols, by a third party. Steam cleaning devices, in particular, show promise as chemical-free disinfection, and we look forward to the results of efficacy testing currently underway at the Massachusetts Toxics Use Reduction Institute.

In summary, this report provides the City and County of San Francisco with the information necessary to identify effective disinfectants and sanitizers posing lower risks to human health and the environment, which supports the City's commitment to the Precautionary Principle. While our conclusions are constrained by data and regulatory limitations, they suggest reasonable steps to protect custodial workers and the general public.

Appendix A: List of Sample Safer Disinfecting and Sanitizing Products

The following surface disinfectants and non-food contact surface sanitizers are recommended by the San Francisco Department of the Environment because they contain active ingredients that are not carcinogens, reproductive or developmental toxins, asthmagens, or skin sensitizers and don't carry other significant health or environmental risks.

This list is not meant to be exhaustive. Instead, it shows how products with a given AI are expected to perform. New products enter the market regularly, and more options meeting these criteria are expected in the future. All products are registered as a disinfectant, non-food-contact sanitizer or both by the US Environmental Protection Agency (EPA) and are approved for use by the California Department of Pesticide Regulation. The list includes brands that have the same registration number as products that were evaluated and recommended in this assessment, as well as products with the same (or a similar) amount of an active ingredient (or combination of active ingredients).

Some of the preferred product examples are concentrated while others are ready-to-use (RTU) formulations. RTUs have the advantage of being pre-diluted, so the products tend to have relatively low hazards. They are, however, substantially more expensive, and concentrates are much preferred for environmental reasons: Since they contain 1/16 to 1/128 as much water, concentrates can be shipped much more cheaply, with less fuel use and therefore greenhouse gas impacts. The recommended concentrates have relatively few health warnings on their diluted use solution, but most are corrosive in their concentrated form. All concentrated disinfecting products should be used ONLY with automatic dilution equipment – preferably "closed loop" systems, which preclude any contact with the concentrated product. Pump-style dilution systems are generally insufficient, as they do not eliminate risks of spills or splashes of the corrosive materials.

More detailed information about each of the evaluated disinfectants, including recommended products, can be found in Table 4 below. The full Microsoft Excel file – with still more detail - is available on request.

Recommended Disinfectants

(Concentrated products - preferred for environmental reasons - are highlighted)

Caprylic/Octanoic Acid

- **Ecolab 65 Disinfecting Heavy-Duty Acid Bathroom Cleaner*** (Concentrate: 1:16-1:21, 10-minute dwell time)

Citric Acid

- **Clean-Cide Ready to Use Germicidal Detergent*** (RTU, 5-minute dwell time)
- **Clean-Cide Wipes** (RTU, 5-minute dwell time)
- **Comet Bathroom Cleaner With Disinfectant** (RTU, 10-minute dwell time)
- **Comet Disinfecting Bathroom Cleaner*** (RTU, 10-minute dwell time)
- **Green Solutions Restroom Cleaner** (RTU, 10-minute dwell time)
- **Method Antibac Kitchen/Bathroom Cleaner*** (RTU, 10-minute dwell time)
- **Professional Lysol Brand II Disinfectant Basin Tub & Tile** (RTU, 10-minute dwell time)

Hydrogen Peroxide (including "Accelerated" HP)

- **Accel Concentrate** (Concentrate: 1:16 dilution, 5-minute dwell time)
- **Alpha-HP Multi-Surface Disinfectant Cleaner*** (Concentrate, 1:64 dilution, 10-minute dwell time)
- **Carpe Diem Concentrate Five 16** (Concentrate, 1:16 dilution, 5-minute dwell time)
- **Oxivir Five 16*** (Concentrate, 1:16 dilution, 5-minute dwell time)
- **Accel Tb** (RTU, 1-minute dwell time)
- **Accel Tb Wipes** (RTU, 1-minute dwell time)
- **Carpe Diem Tb** (RTU, 1-minute dwell time)
- **Carpe Diem Tb Wipes** (RTU, 1-minute dwell time)
- **Clorox Healthcare Hydrogen Peroxide Cleaner Disinfectant*** (RTU, 1-minute dwell time for most organisms)
- **Clorox Healthcare Hydrogen Peroxide Cleaner Disinfectant Wipes** (RTU, 1-minute dwell time for most organisms)
- **Clorox Hydrogen Peroxide Cleaner Disinfectant** (RTU, 1-minute dwell time for most organisms)
- **Clorox Hydrogen Peroxide Cleaner Disinfectant Wipes** (RTU, 1-minute dwell time for most organisms)
- **Lysol Power & Free Bathroom Cleaner With Hydrogen Peroxide** (RTU, 10-minute dwell time)
- **Lysol Power & Free Multi-Purpose Cleaning Wipes With Hydrogen Peroxide** (RTU, 10-minute dwell time)
- **Optim Tb** (RTU, 1-minute dwell time)
- **Optim Tb Wipes** (RTU, 1-minute dwell time)
- **Oxivir Tb*** (RTU, 1-minute dwell time)

Lactic Acid

- **Bright Green Disinfecting All Purpose Cleaner** (RTU, 5-minute dwell time)
- **Bright Green Antimicrobial Toilet Bowl Cleaner** (RTU, 5-minute dwell time)
- **Scrubbing Bubbles Multi-Surface Bathroom Cleaner** (RTU, 5-minute dwell time)
- **Lysol Brand III Disinfecting All Purpose Cleaner*** (RTU, 5-minute dwell time)
- **Windex Disinfectant Cleaner/Windex Touch-Up Cleaner II** (RTU, 10-minute dwell time)
- **Windex Multi-Surface Antibacterial*/Windex Touch-Up Cleaner** (RTU, 5-minute dwell time)

Silver + Citric Acid (Limited Use Due to Water Quality Concerns from Large-Scale Application)

- **Critical Care** (RTU, 10-minute dwell time)
- **Fiberlock Technologies Shockwave Green 24 Botanical & Silver Disinfectant** (RTU, 10-minute dwell time)
- **Germ Control 24-Silver Formula** (RTU, 10-minute dwell time)
- **Pure Hard Surface** (RTU, 5-minute dwell time)
- **PureGreen24** (RTU, 10-minute dwell time)

Silver + Hydrogen Peroxide (Limited Use Due to Water Quality Concerns from Large-Scale Application)

- **Hydroxi Pro Force D** (RTU, 10 minute dwell time)
- **Sanosil S010** (RTU, 10 minute dwell time)

Recommended Non-food Contact Surface Sanitizers

(Concentrated products - preferred for environmental reasons - are highlighted)

Caprylic/Octanoic Acid

- **Ecolab 65 Disinfecting Heavy-Duty Acid Bathroom Cleaner*** (Concentrate, 1:40 dilution, 5-minute dwell time)

Citric Acid

- **Comet Disinfecting Bathroom Cleaner*** (Concentrate, 1:4 dilution, 5-minute dwell time)
- **Clean-Cide Ready to Use Germicidal Detergent*** (RTU, 60-second dwell time)
- **Clean-Cide Germicidal Wipes** (RTU, 60-second dwell time)
- **Method Antibac Kitchen/Bathroom Cleaner*** (RTU, 5-minute dwell time)
- **Professional Lysol Brand II Disinfectant Basin, Tub & Tile Cleaner** (RTU: 30-second dwell time)

Hydrogen Peroxide (including "Accelerated" HP)

- **Accel (Concentrate: 1:128, 3-minute dwell time)**
- **Alpha HP (Concentrate, 1:128 dilution, 3-minute dwell time)**
- **Alpha-HP Multi-Surface Disinfectant Cleaner* (Concentrate, 1:128 dilution, 3-minute dwell time)**
- **Carpe Diem Concentrate Five 16 (Concentrate: 1:128, 3-minute dwell time)**
- **Envirox Concentrate 118/H2Orange2 117*** (Concentrate, 5-minute dwell time)
- **Envirox H2Orange2 Superconcentrate 112** (Concentrate: 5:23 dilution, 5-minute dwell time)
- **G-Force H2O2 Bathroom Cleaner Disinfectant (Concentrate, 1:128 dilution, 3-minute dwell time)**
- **Oxivir Five 16* (Concentrate, 1:128 dilution, 3-minute dwell time)**
- **Ramsey Bathroom Cleaner Disinfectant (Concentrate, 1:128 dilution, 3-minute dwell time)**
- **Accel Tb** (RTU, 30-second dwell time)
- **Accel Tb Wipes** (RTU, 30-second dwell time)
- **Carpe Diem Tb** (RTU, 30-second dwell time)
- **Carpe Diem Wipes** (RTU, 30-second dwell time)
- **Envirox H2Orange2 One***(RTU, 5-minute dwell time)
- **Optim Tb** (RTU, 30-second dwell time)
- **Optim Tb Wipes** (RTU, 30-second dwell time)
- **Oxivir Tb*** (RTU, 30-second dwell time)

Lactic Acid

- **Bright Green Disinfecting All Purpose Cleaner** (RTU, 60-second dwell time)
- **Bright Green Disinfecting Bathroom Cleaner** (RTU, 60-second dwell time)
- **Bright Green Antimicrobial Toilet Bowl Cleaner** (RTU, 60-second dwell time) – limited efficacy
- **Lysol Brand III Disinfecting All Purpose Cleaner*** (RTU, 30-second dwell time)
- **Scrubbing Bubbles Multi-Surface Bathroom Cleaner** (RTU, 30-second dwell time)
- **Spartan Peroxy II FBC Antibacterial Foaming Bath & Surface Cleaner (RTU, 2-minute dwell time)**
- **Windex Disinfectant Cleaner/Windex Touch-Up Cleaner II** (RTU, 10-second dwell time)
- **Windex Multi-Surface Antibacterial*/Windex Touch-Up Cleaner** (RTU, 10-second dwell time) – also contains isopropyl alcohol

Table 4. Summary of product efficacy and health/environmental impacts for disinfectant and sanitizer products reviewed

Active Ingredient	Conc or RTU	Product	Disinfection				Sanitizing			Health								Environment		
			Dwell (min.)	Bact.	Viruses	Fungi	Sanitizer?	Dwell time (min.)	Signal Word	Cancer	Repro.	Respir.	Asthma	Skin	Eye	pH	HMIS	Aquatic	Persist.	Eutroph.
Caprylic acid (Octoanoic acid)	Conc	Ecolab 65 Disinfecting Heavy-Duty Acid Bathroom Cleaner [1677-204]	10	9	7	1	Yes	5 min @ 3 oz/gal	DANGER - Corrosive	0	0	3	No	4	4	C	3	1	0	Yes
Citric acid	RTU	Clean-Cide Ready to Use Germicidal Detergent [34810-35]	5	8	10	1	Yes	1 min	CAUTION	0	0	1	No	1	2	2 - 2.3	0	0	0	No
	RTU	Comet Disinfecting Bathroom Cleaner [3573-54]	10	17	10	0	Yes	5 min @ 1:4	CAUTION	0	0	1	No	1	2	3	3	0	0	No
	RTU	Method Antibac Kitchen Cleaner [75277-2]	10	4	2	None	Yes	5	CAUTION	0[1]	0	0	No	0	0	4-6	0	0	0	No
Hydrogen peroxide	RTU	Clorox Healthcare Hydrogen Peroxide Cleaner Disinfectant [67619-24]	1	25	18	2	Yes	30 sec.	CAUTION	0[1]	8	8	No	2	3	2	No info	2	0	No
	RTU	Lysol Power & Free Multi-Purpose Cleaner With Hydrogen Peroxide [777-117]	10	6	5	1	No	N/A	NONE	0[1]	0	0	No	1	1	2.1-3.5	1	2	0	No
Hydrogen Peroxide, Accelerated (AHP)	Conc	Alpha-HP Multi-Purpose Disinfectant Cleaner [70627-62]	10	7	14	None	Yes	3 min @ 1:128	CAUTION	0[1]	0	0	No	1	2	2.05	2	2	0	Yes
	Conc	Oxivir Five 16 Concentrate [70627-58]	5	17	17	1	Yes	3 min @ 1:128	CAUTION	0[1]	0	0	No	1	2	1.9	2	2	0	Yes
	RTU	Oxivir Tb [70627-56]	1 (B,V), 10 (F)	12	14	1	Yes	30 sec	CAUTION	0[1]	0	0	No	0	0	3	0	2	0	Yes
Lactic acid	RTU	Lysol Brand III Disinfectant All Purpose Cleaner (4 in 1) [777-100]	10	6	4	None	Yes	30 secs	CAUTION	0	0	0	No	0	2	3	2	0	0	No
	RTU	Windex Multi-Surface Antibacterial Cleaner [4822-549]	5	3	None	None	Yes	10 secs	CAUTION	0	0	0	No	0	2	2.3 - 3.3	3	0	0	No
Ortho-Phenylphenol (OPP)	Conc	Ecolab 23 TB Disinfectant and Deodorizer [303-223-ZB-1677]	10	23	9	2	No	N/A	DANGER - Corrosive	2	1	4	No	4	4	12-13	3	3	0	No
	RTU	Airysol Brand Multi-Purpose Disinfectant Cleaner [33176-6]	10	3	5	0	No	N/A	CAUTION	2	1	0	No	0	2	2.5-13	1	3	0	No
Peroxyacetic Acid (PAA)	Conc	SaniDate 5.0 [70299-19]	10	16	3	2	Yes	1.6 oz+5 gals water	DANGER - Corrosive	0	0	2	Yes	4	4	1.33	2	3	0	No
Pine Oil	Conc	Pinalen [72138-4]	10	gram negative - unspec.	0	0	No	N/A	CAUTION	0[2]	0	0	No[3]	2S	2	12-13	1	0	0	No
	RTU	Clorox Commercial Solutions Pine-Sol Brand Cleaner 1 [5813-83-AA-67619]	10	2	0	1	No	N/A	WARNING	0[2]	0	0	No[3]	2S	3	3-4	No info	0	0	No

Table 4. (Cont'd)

Active Ingredient	Conc or RTU	Product	Disinfection				Sanitizing			Health								Environment		
			Dwell (min.)	Bact.	Viruses	Fungi	Sanitizer?	Dwell time (min.)	Signal Word	Cancer	Repro.	Respir.	Asthma	Skin	Eye	pH	HMIS	Aquatic	Persist.	Eutroph.
Quaternary Ammonium Chloride Compounds (Quats)	Conc	Virex II/256 [70627-24]	10	67	20	5	Yes	1 min @ 1:256	DANGER - Corrosive	0	1*	4	Yes	4[4]	4	8.8	3	3	3	No
	Conc	Enviro Care Neutral Disinfectant [47371-131-ZA-527]	10	30	29	3	Yes	1 min @ 1:64	DANGER - Corrosive	0	1*	2	Yes	2[4]	4	7.2-8.2	2	3	3	No
	RTU	Clorox Disinfecting Wipes [5813-58]	4	8	8	0	Yes	30 secs	CAUTION	0	1*	0	Yes	1[4]	2	5-6	No info	3	3	No
	RTU	Professional Lysol Brand Disinfectant Antibacterial Kitchen Cleaner [777-66-ZG-675]	10	8	5	Limited	Yes	30 secs	WARNING	0	1*	0	Yes	1[4]	3	10.5 - 11.1	2	3	3	No
Silver+citric acid	RTU	Critical Care [72977-3-69268]	2 (B) 10 (V,F)	11	9	1	No	N/A	CAUTION	0	0	0	No	0	1	2	0	2	3	No
	RTU	Pure Hard Surface [72977-5-ZA-73912]	2 min (B) 1 min (V) 5 min (F)	14	16	1	No	N/A	CAUTION	0	0	0	No	0	1	2	0	2	3	No
Silver + hydrogen peroxide	RTU	Hydroxi Pro Force D [84526-1-66515]	10	7	5	1	Yes	5	CAUTION	0[1]	0	1	No	1	2	5	1	2	3	No
Sodium Hypochlorite (chlorine bleach)	Conc	Clorox Concentrated Regular Bleach 1 [5813-100]	5-10	13	19	3	Yes	30 secs	DANGER - Corrosive	0	0	4	Yes	4	4	12	No info	3	0	No
	RTU	Bleach-Rite Disinfecting Spray With Bleach [70590-2]	1	10	11	2	No	N/A	CAUTION	0	0	2	Yes	0	2	12.3	No info	3	0	No
Thymol	Conc	Wexford Thymo-cide [34810-18]	10	5	5	1	No	N/A	DANGER - Corrosive	0	0[5]	1	No	25	4	3	3	2	0	No
	RTU	Method Antibac Antibacterial Kitchen Cleaner [84683-3-AA-75277] Same as Benefect	10	5	4	2	Yes	5	CAUTION	0	0[5]	0	No	05	0	4-6	0	2	0	No

Conc or RTU	Concentrated (Conc) or Ready to Use (RTU) formulation	Dwell	Dwell time for disinfection claims (minutes)	Bact, Viruses, Fungi	Number of kill claims made by manufacturer for each kind of organism	Sanitizer? Dwell time	Yes=registered as a sanitizer at a different dilution. Dwell time for sanitizer (min.)
Cancer	0 = not known or suspected carcinogen; 1 = suspected carcinogen; 2= known carcinogen	Repro	0 = not known or suspected reproductive/developmental toxicant; 1 = suspected; 2 = known	Respir.	0 = no respiratory irritation; 1 = mild irritant; 2 = moderate; 3 = severe; 4 = permanent damage	Asthma	No = not on AOEC asthmagen list; Yes = on AOEC list
Skin	0 = no skin irritation; 1 = mild irritant; 2 = moderate; 3 = severe; 4 = permanent damage, S = skin sensitizer	Eye	0 = no eye irritation; 1 = mild irritant; 2 = moderate; 3 = severe; 4 = permanent damage	HMIS	Lists highest score on HMIS hazard communication system	Aquatic	0 = no aquatic toxicity noted; 1 = medium; 2 = high; 3 = very high, or medium acute + chronic aquatic toxicity
Persist	0 = none; 1 = low; 2= med; 3=high; 4=very high	Eutroph					

Appendix B: Sample Disinfectants for Special Situations

Products Effective Against Athlete's Foot Fungus

Although several products claim efficacy against the athlete's foot fungus (AFF), *Trichophyton mentagrophytes*, it typically takes 5 to 10 minutes to inactivate this fungus. Even disinfectants with a shorter dwell time to kill the required test bacteria often must be left on surfaces longer to be effective against AFF. For example, Clorox Hydrogen Peroxide Disinfectant Cleaner, a ready-to-use (RTU) disinfectant that is effective against 17 strains of bacteria and 17 viruses in one minute, requires a 5-minute dwell time to kill AFF. Table 5 details whether the sample products included in this evaluation claim efficacy against the athlete's foot fungus.

Table 5. Review of disinfectants claiming efficacy against athlete's food fungus

Active Ingredient		Dwell Time
RECOMMENDED PRODUCTS		
Caprylic Acid (aka Octanoic Acid)	None	N/A
Citric Acid	**Clean-Cide Ready to Use Germicidal Detergent*** **Clean-Cide Germicidal Wipes** RTU: 0.6% citric acid	5 minutes
	Professional Lysol Brand II Disinfectant Basin, Tub & Tile Cleaner RTU: 2.5% citric acid	10 minutes
Hydrogen Peroxide and "Accelerated" Hydrogen Peroxide (AHP™)	**Clorox Healthcare Hydrogen Peroxide Cleaner Disinfectant*** **Clorox Hydrogen Peroxide Cleaner Disinfectant** **Clorox Healthcare Hydrogen Peroxide Cleaner Disinfectant Wipes** **Clorox Hydrogen Peroxide Cleaner Disinfectant Wipes** RTU: 1.4% hydrogen peroxide (H_2O_2)	3 minutes
	Accel Concentrate (AHP™) **Carpe Diem Concentrate Five 16 (AHP™)** **Oxivir Five 16* (AHP™)** Concentrate: 4.25% hydrogen peroxide (H_2O_2) 1:16 dilution (8 oz. per gallon of water)	5 minutes
	Accel Tb (AHP™) and Accel Tb Wipes (AHP™) **Carpe Diem Tb (AHP™) and Carpe Diem Tb Wipes (AHP™)** **Optim Tb (AHP™) and Optim Tb Wipes (AHP™)** **Oxivir Tb* (AHP™) and Oxivir Tb Wipes (AHP™)** RTU: 0.5% hydrogen peroxide (H_2O_2)	10 minutes
	Lysol Power & Free Multi-Purpose Cleaner With Hydrogen Peroxide **Lysol Power & Free Multi-Purpose Cleaning Wipes With Hydrogen Peroxide** RTU: 0.88% hydrogen peroxide (H_2O_2)	10 minutes
Lactic Acid	**None**	N/A
LIMITED USE PRODUCTS (RECOMMENDED FOR APPROPRIATE OUTBREAK SITUATIONS ONLY)		
Silver + Citric Acid	**Pure Hard Surface*** RTU: 0.003% silver + 4.84% citric acid	5 minutes
	Critical Care* (Also, **Fiberlock Technologies Shockwave Green 24 Botanical & Silver Disinfectant, Germ Control 24-Silver Formula** and **PureGreen24**) RTU: 0.003% silver + 4.84% citric acid	10 minutes
Silver + Hydrogen Peroxide (H_2O_2)	**H2ydro2xi Pro Force D*** (also **Sanosil S010**) RTU: 0.01% silver nitrate + 5% hydrogen peroxide	10 minutes

**Products with an asterisk were fully evaluated for toxicity and overall efficacy. Products without an asterisk have the relevant active ingredient(s) (and sometimes the same EPA registration number) but were evaluated only for their efficacy against Athlete's Foot Fungus.*

Disinfectants Effective Against Bloodborne Pathogens (HIV and HBV In California)

Overview

In the case of a blood spill or another incident involving bodily fluids, *The California Bloodborne Pathogen Standard*[127] points to *A Best Practices Approach to Reducing Bloodborne Pathogen Exposure*, which recommends that facilities decontaminate the surface with one of the following:[128]

1. Diluted bleach solutions, or
2. U.S. Environmental Protection Agency (EPA)-registered products (e.g., tuberculocides, sterilants and products effective against HIV or HBV)

The U.S. EPA has published a list of *U.S. EPA's Registered Antimicrobial Products Effective Against Human HIV-1 Virus and Hepatitis B Virus*. Unfortunately, the latest version posted on the U.S. EPA website is dated January 2009; see http://www.epa.gov/oppad001/list_d_hepatitisbhiv.pdf. A similar list is available for tuberculocides at http://www.epa.gov/oppad001/list_b_tuberculocide.pdf.

It is important to note that some products are registered as a virucide against HIV, and their EPA-approved labels give instructions for cleaning up blood, but they are not registered as effective against HBV. Though use of the suggested product parameters referred to in the *California Bloodborne Pathogen Standard* is not a requirement, prudence would suggest the use of a product that claims efficacy against both pathogens. Therefore, products are only listed below (Table 6) if they claim efficacy against both HIV and HBV.

Label Language to Look For

Typically, the label for a product that is recommended for use against bloodborne pathogens will contain the following type of information (from sample product *Clorox Healthcare Hydrogen Peroxide Disinfectant Cleaner* (EPA Reg. # 67619-24).

> ***Special Instructions for Use Against HIV-1, HBV, and HCV***
> *This product kills HIV-1, HBV, and HCV on precleaned environmental surfaces/objects previously soiled with blood/body fluids in health care settings (hospitals, nursing homes) or other settings in which there is an expected likelihood of soiling of inanimate surfaces/objects with blood or body fluids, and in which the surfaces/objects likely to be soiled with blood or body fluids can be associated with the potential for transmission of Human immunodeficiency Virus (HIV-1) (associated with AIDS), Human Hepatitis B Virus (HBV) and Human Hepatitis C Virus (HCV).*
>
> ***Special instructions for using this product to clean and decontamination against HIV-1, HBV and HCV on surfaces/objects soiled with blood/body fluids. Personal Protection:*** *When handling items soiled with blood or body fluids, use disposable impervious gloves, gowns, masks and eye coverings.* ***Cleaning Procedure:*** *Blood and other body fluids must be thoroughly cleaned from surfaces and other objects before applying this product.* ***Contact Time:*** *Allow surface to remain wet for HBV, HCV and HIV-1 for 30 seconds. The contact times for other bacteria, viruses, and fungi may differ. See product label for contact times.* ***Disposal of Infectious Materials:*** *Use disposable impervious gloves, gown, masks and eye coverings. Blood and other body fluids must be autoclaved and disposed of according to local regulations for infectious waste disposal.*

Table 6. Review of disinfectants effective against bloodborne pathogens

Active Ingredient	Disinfectants that Claim Efficacy Against HIV and HBV	Dwell Time
RECOMMENDED PRODUCTS		
Caprylic Acid (aka Octanoic Acid)	None	N/A
Citric Acid	**Clean-Cide Ready to Use Germicidal Detergent*** RTU: 0.6% citric acid	HIV: 5 minutes HBV: 10 minutes
	Clean-Cide Germicidal Wipes RTU: 0.6% citric acid	HIV: 5 minutes HBV: 10 minutes
	Comet Disinfecting Bathroom Cleaner* RTU: 6% citric acid	10 minutes
Hydrogen Peroxide and "Accelerated" Hydrogen Peroxide (AHP™)Hydrogen Peroxide (H_2O_2)	**Accel Concentrate (AHP™)** Concentrate: 4.25% hydrogen peroxide (H_2O_2) 1:16 dilution (8 oz. per gallon of water)	HIV: 1 minute HBV: 5 minutes
	Accel Tb and **Optim Tb (AHP™)** RTU: 0.5% hydrogen peroxide (H_2O_2)	1 minute
	Accel Tb Wipes and Optim Tb Wipes (AHP™) RTU: 0.5% hydrogen peroxide (H_2O_2)	1 minute
	Alpha-HP Multi-Surface Disinfectant Cleaner* (AHP™) Concentrate: 4.25% hydrogen peroxide (H_2O_2) 1:64 dilution (2 oz. per gallon of water) *Note: this product has a 10-minute dwell time for bacterial disinfection.*	HIV: 1 minute HBV: 5 minutes
	Carpe Diem Concentrate Five 16 (AHP™) **Oxivir Five 16*** Concentrate: 4.25% hydrogen peroxide (H_2O_2) 1:16 dilution (8 oz. per gallon of water)	HIV: 1 minute HBV: 5 minutes
	Carpe Diem Tb and **Oxivir Tb* (AHP™)** RTU: 0.5% hydrogen peroxide (H_2O_2)	1 minute (including HIV, HBV & HCV)
	Carpe Diem Tb Wipes and **Oxivir Tb Wipes (AHP™)** RTU: 0.5% hydrogen peroxide (H_2O_2)	1 minute (including HIV, HBV & HCV)
	Clorox Healthcare Hydrogen Peroxide Cleaner Disinfectant Wipes **Clorox Hydrogen Peroxide Cleaner Disinfectant Wipes** RTU: 1.4% hydrogen peroxide (H_2O_2)	30 seconds
	Clorox Healthcare Hydrogen Peroxide Cleaner Disinfectant* **Clorox Hydrogen Peroxide Cleaner Disinfectant** RTU: 1.4% hydrogen peroxide (H_2O_2)	30 seconds (including HIV, HBV & HCV)
Lactic Acid	**None**	N/A
LIMITED USE PRODUCTS (RECOMMENDED FOR APPROPRIATE OUTBREAK SITUATIONS ONLY)		
Silver + Citric Acid	**Pure Hard Surface*** **RTU: 0.003% silver + 4.84% citric acid**	**HIV: 30 seconds** **HBV: 1 minute** **HCV: 1 minute**

*Products in this table with an asterisk were fully evaluated in this report for toxicity and overall efficacy. Other products in this table without an asterisk have the relevant active ingredient(s) (and sometimes the same EPA registration number) but were evaluated only for their efficacy against these two bloodborne pathogens (HIV and HBV)

Disinfectants Effective Against Norovirus

Not all disinfectants kill viruses. Table 7 lists the evaluated products that are registered for use in California and claim efficacy against norovirus (aka Norwalk virus), which can cause stomach flu or gastroenteritis. This table also notes the dwell time needed to kill Norovirus.

Table 7. Review of disinfectant efficacy against norovirus

Active Ingredient	Disinfectants That Claim Efficacy Against Norovirus	Dwell Time
	RECOMMENDED PRODUCTS	
Caprylic Acid (Octanoic Acid)	**Ecolab 65 Disinfecting Heavy-Duty Acid Bathroom Cleaner*** Concentrate: 3.05% octanoic acid 6-8 oz. per gallon of water	10 minutes
Citric Acid	**Clean-Cide Ready to Use Germicidal Detergent*** RTU: 0.6% citric acid	5 minutes
	Clean-Cide Germicidal Wipes RTU: 0.6% citric acid	5 minutes
	Comet Disinfecting Bathroom Cleaner* RTU: 6% citric acid	10 minutes
Hydrogen Peroxide and "Accelerated" Hydrogen Peroxide (AHP™)	**Accel Concentrate (AHP™)** Concentrate: 4.25% hydrogen peroxide (H_2O_2) 1:16 dilution (8 oz. per gallon of water)	5 minutes
	Accel Tb and **Optim Tb (AHP™)** RTU: 0.5% hydrogen peroxide (H_2O_2)	1 minute
	Accel Tb Wipes and **Optim Tb Wipes (AHP™)** RTU: 0.5% hydrogen peroxide (H_2O_2)	1 minute
	Alpha-HP Multi-Surface Disinfectant Cleaner* (AHP™) Concentrate: 4.25% hydrogen peroxide (H_2O_2) 1:16 dilution (8 oz. per gallon of water) *10-minute dwell time for bacterial disinfection.*	5 minutes
	Carpe Diem Concentrate Five 16 and **Oxivir Five 16* (AHP™)** Concentrate: 4.25% hydrogen peroxide (H_2O_2) 1:16 dilution (8 oz. per gallon of water)	5 minutes
	Carpe Diem Tb and **Oxivir Tb* (AHP™)** RTU: 0.5% hydrogen peroxide (H_2O_2)	1 minute
	Carpe Diem Tb Wipes and **Oxivir Tb Wipes (AHP™)** RTU: 0.5% hydrogen peroxide (H_2O_2)	1 minute
	Clorox Healthcare Hydrogen Peroxide Cleaner Disinfectant Wipes **Clorox Hydrogen Peroxide Cleaner Disinfectant Wipes** RTU: 1.4% hydrogen peroxide (H_2O_2)	1 minute
	Clorox Healthcare Hydrogen Peroxide Cleaner Disinfectant* **Clorox Hydrogen Peroxide Cleaner Disinfectant** RTU: 1.4% hydrogen peroxide (H_2O_2)	1 minute
Lactic Acid	*None*	N/A
	LIMITED USE PRODUCTS (RECOMMENDED FOR APPROPRIATE OUTBREAK SITUATIONS ONLY)	
Silver + Citric Acid	**Critical Care*, Fiberlock Technologies Shockwave Green 24 Botanical & Silver Disinfectant, Germ Control 24-Silver Formula** and **PureGreen24** RTU: 0.003% silver + 4.84% citric acid	10 minutes
	Pure Hard Surface* RTU: 0.003% silver + 4.84% citric acid *2-minute dwell time for bacterial disinfection*	1 minute
Silver + Hydrogen Peroxide (H_2O_2)	None	N/A

**Products in this table with an asterisk were fully evaluated for toxicity and efficacy in this report. Other products with the same active ingredients (and sometimes the same EPA registration number) were evaluated only for their efficacy against Norovirus.*

Appendix C: Best Practices for Cleaning, Sanitizing and Disinfecting Surfaces

Product selection is only one element of a comprehensive risk reduction strategy for disinfection and sanitizing. The ways these products are used – or not used – are equally important. Below are our recommendations for best practices relating to the selection, dilution and use of antimicrobial cleaning products.

1.) Determine where and when disinfectants are needed. Use disinfectants and sanitizers only on

surfaces with high public health significance, where germs (such as flu virus) might be easily transferred to others, or where required by law. If sanitizers and/or disinfectants are needed, public agencies should establish procedures detailing where, when and how they should be used, and ensure that all janitorial staff are properly trained.

General guidelines for targeting disinfectant/sanitizer use:

- ***Use disinfectants on touch points.*** Products with general disinfecting claims are primarily needed for *touch points*: Faucets, doorknobs, sinks, toilet seats, railings, and other surfaces frequently touched by building occupants. To kill viruses or fungi, look for disinfectants specifically registered for use against these organisms, since some disinfectants are registered to kill only bacteria.

- ***Non-food-contact surface sanitizers might be good enough*** for routine use in areas such as restroom floors, walls, and toilets. These products kill target organisms to the 99.9% level, which is sufficient for most surfaces needing removal of microbes beyond the level achieved by using a non-antimicrobial cleaning product and water.

- ***Know the laws and guidelines that apply to your facility***. Certain types of facilities have specialized cleaning, sanitizing and disinfection requirements. For example, licensed childcare operations often have specific requirements in diaper-changing and bathroom areas. Similarly, restrooms in correctional or healthcare facilities may fall under specific state or local regulations.

- ***Food contact surfaces are a special case***. Public health regulations usually require surfaces that come in direct contact with food - primarily in the kitchen - to be pre-cleaned and then treated with a product that is approved for use as a food-contact surface sanitizer. Food-contact sanitizer products are outside the scope of this report.

- ***Bodily fluids require special procedures and products.*** Disinfectants claiming bloodborne pathogen efficacy may be needed if there is an incident resulting in contamination with bodily fluids (such as blood or vomit). Facilities should follow the OSHA *Bloodborne Pathogen Standard* in these cases, and stock at least one disinfectant with claims for HIV, HBV and HCV.

- ***Other special situations may require more careful product selection.*** Disinfectants that are registered to kill athlete's foot fungus are appropriate for locker rooms and gym areas. Flu epidemics require products registered for influenza, and more extensive use of disinfectants. Read labels carefully and consider clearly labeling which product is used for each situation.

2.) Clean first. Microbes adhere to organic matter, which means that effective cleaning is usually sufficient to eliminate 80-99% of germs[123]. Surfaces such as mirrors (even restroom mirrors), windows and walls, for example, generally do not need to be treated with sanitizers or disinfectants. Instead, these surfaces should be cleaned with a Green Seal- or ULE/EcoLogo-certified general-purpose or glass cleaner. Public agencies should consider using microfiber mops and cloths since they are more effective at removing dirt and germs than conventional string mops. Microfiber systems are popular in health care facilities because they minimize transferring microbes from room to room because a new microfiber pad is used in each room.[129]

In situations where disinfection is required, a two-step process is ideal: Clean the surfaces first, followed by a U.S. EPA-registered and California DPR-approved non-food-contact surface sanitizer or disinfectant. Although some products are labeled as one-step cleaner-disinfectants, it is not advisable to use them because it is difficult to monitor whether they are being used properly. Such products demonstrated their

efficacy to U.S. EPA in the presence of 5% organic matter. However, if a surface exceeds that level, the product will no longer be effective.

3.) Evaluate current products and identify safer alternatives. An important first step in developing a cleaning plan is to conduct a baseline assessment of the cleaners, sanitizers and disinfectants that are used on various surfaces in the facility's restrooms and other areas. It is important to develop an inventory of products currently in use on various surfaces in hallways, restrooms, offices, and other parts of the building.

The next step is to review two important documents for each of these products to identify its health and environmental risks: its material safety data sheet (MSDS) and its U.S. EPA-approved pesticide label. Together, these documents will help users identify many of the important health and environmental risks, as well as the efficacy and dwell time of products currently in use. As a general rule, target for elimination those products containing ortho-phenylphenol, chlorine bleach, quaternary ammonium chloride compounds (quats), peroxyacetic acid, pine oil, and thymol. Compare their efficacy to products containing hydrogen peroxide, citric acid, lactic acid, or caprylic acid and choose an alternative product with the efficacy you need.

4.) Follow label instructions regarding proper dilution, application and rinsing procedures, and dwell time. All antimicrobial products must be left on the surface for the required "dwell time" in order to be effective against the organisms claimed on the label. If a product is wiped or rinsed off before the required dwell time, it is not likely to effectively kill the germs you are trying to target. Some products must also be rinsed off to prevent exposure to building occupants who may touch the residual disinfectant, and to prevent corrosive damage to the surface.

5.) Avoid aerosol products. Aerosol cans often contain a significant amount of propellant, making the per-unit cost of product high compared to non-aerosol delivery systems[130]. Most propellants have environmental concerns, and the use of aerosol products also increases exposure because the product is delivered in a fine mist, which can easily penetrate the lungs.

6.) Avoid antimicrobial air fresheners. Because disinfectants need to saturate a surface for 1 to 10 minutes in order to be effective, there is almost no germ-killing benefit from spraying disinfectants or sanitizers into the air. These products are often used to mask odors but result in unnecessary exposure, are generally not effective at killing germs, and can cause or aggravate asthma, adding to any health impacts of the active ingredient or other components. If you need an air freshener, choose one that does not have a U.S. EPA registration label on it. Even better, identify the source of the odor and devise a chemical-free solution such as improved ventilation, if possible.

7.) Select concentrates that come in closed-loop delivery systems. Concentrated cleaning, sanitizing and disinfecting products are the most cost-effective options[131]. Concentrates are also environmentally preferable, since they avoid the need to ship large volumes of water long distances. However, concentrates typically pose more serious acute health hazards – such as eye and skin irritation - than ready-to-use (RTU) formulations. For these reasons, we recommend closed-loop delivery systems, which are recognizable by the use of sealed bottles that can only be opened once they are fixed to the dilution apparatus. Workers cannot simply open these bottles and pour them into a bucket, and there is no possibility of contact with the concentrates. A poor second choice to closed-loop systems would be measuring pumps, which can be purchased separately and attached to the (unsealed) bottle.

Besides protecting workers, dilution systems also make it easy to dilute the product accurately, reducing the likelihood of making solutions that are too strong or too weak, which is the case when concentrates

are diluted by hand (e.g., using the “glug-glug” method). Proper dilution can also save money, since users are often tempted to err on the side of stronger solutions.

Appendix D: Sample Products Reviewed

Table 8. Sample Surface Disinfectants

Active Ingredient	Sample Disinfecting Products Evaluated	Company Name EPA Registration No.
	RECOMMENDED PRODUCTS	
Caprylic Acid (Octanoic Acid)	**65 Disinfecting Heavy-Duty Acid Bathroom Cleaner** Concentrate: 3.05% octanoic acid; Disinfecting Dilution: 6-8 oz. per gallon of water (1:16-1:21) 10-minute dwell time for surface disinfecting (most organisms)	Ecolab, Inc. EPA Reg. No. 1677-204; Label: www.epa.gov/pesticides/chem_search/ppls/001677-00204-20120426.pdf
Citric Acid	**Clean-Cide Ready to Use Germicidal Detergent** RTU: 0.6% citric acid 5-minute dwell time for surface disinfecting (most organisms)	Wexford Labs EPA Reg. No. 34810-35; Label: www.epa.gov/pesticides/chem_search/ppls/034810-00035-20121024.pdf
	Comet Disinfecting Bathroom Cleaner (also called **Comet Disinfecting-Sanitizing Bathroom Cleaner)** RTU: 6% citric acid 10-minute dwell time for surface disinfecting	Procter & Gamble EPA Reg. No. 3573- 54; Label: www.epa.gov/pesticides/chem_search/ppls/003573-00054-20130404.pdf
	Method Antibac Kitchen Cleaner (Also called **Antibac Bathroom Cleaner**) RTU: 5% citric acid 10-minute dwell time for surface disinfecting	Method Products, Inc. EPA Reg. No. 75277-2; Label: www.epa.gov/pesticides/chem_search/ppls/075277-00002-20110706.pdf
Hydrogen Peroxide (H_2O_2), including Accelerated (AHP™)	**Alpha-HP Multi-Surface Disinfectant Cleaner (AHP™)** Concentrate: 4.25% hydrogen peroxide (H_2O_2); 1:64 dilution 10-minute dwell time for surface disinfecting	Diversey, Inc. (Sealed Air) EPA Reg. No. 70627-62; Label: www.epa.gov/pesticides/chem_search/ppls/070627-00062-20110511.pdf
	Clorox Healthcare™ Hydrogen Peroxide Cleaner Disinfectant (also called **Clorox Hydrogen Peroxide Disinfecting Cleaner**) RTU: 1.4% hydrogen peroxide (H_2O_2) 1-minute dwell time (30-seconds for efficacy against many organisms)	Clorox Professional Products Company EPA Reg. No. 67619-24; Label: www.epa.gov/pesticides/chem_search/ppls/067619-00024-20120906.pdf
	Lysol Power & Free Multi-Purpose Cleaner With Hydrogen Peroxide RTU: 0.88% hydrogen peroxide (H_2O_2) 10-minute dwell time for surface disinfecting	Reckitt Benckiser EPA Reg. No. 777-117; Label: www.epa.gov/pesticides/chem_search/ppls/000777-00117-20110930.pdf
	Oxivir Five 16 (AHP™) Concentrate: 4.25% hydrogen peroxide (H_2O_2); 1:16 dilution 5-minute dwell time for surface disinfecting (most organisms)	Diversey, Inc. (Sealed Air) EPA Reg. No. 70627-58; Label: www.epa.gov/pesticides/chem_search/ppls/070627-00058-20101119.pdf
	Oxivir Tb (AHP™) RTU (Liquid): 0.5% hydrogen peroxide (H_2O_2) 1-minute dwell time for surface disinfecting (most organisms)	Diversey, Inc. (Sealed Air) EPA Reg. No. 70627-56; Label: www.epa.gov/pesticides/chem_search/ppls/070627-00056-20120920.pdf
Lactic Acid	**Lysol Brand III Disinfectant All Purpose Cleaner** (also called **Lysol Brand III Kills 99.9% of Virus & Bacteria All Purpose Cleaner**) RTU: 3.2% lactic acid 10-minute dwell time for surface disinfecting	Reckitt Benckiser EPA Reg. No. 777-100; Label: www.epa.gov/pesticides/chem_search/ppls/000777-00100-20120801.pdf
	Windex Multi-surface Antibacterial (also called **Windex Touch-Up Cleaner**) RTU: 0.18% lactic acid 5-minute dwell time for surface disinfecting	S.C. Johnson & Son, Inc. EPA Reg. No. 4822-549; Label: www.epa.gov/pesticides/chem_search/ppls/004822-00549-20120619.pdf

Table 8 (cont'd)

Active Ingredient	Sample Disinfecting Products Evaluated	Company Name EPA Registration No.
LIMITED USE PRODUCTS (RECOMMENDED FOR APPROPRIATE OUTBREAK SITUATIONS ONLY)		
Silver + Citric Acid	**Critical Care** RTU: 0.003% silver + 4.846% citric acid 10-minute dwell time for surface disinfecting (for most viruses and fungi); 2-minute dwell time (for most bacteria)	Envirox, LLC EPA Reg. No. 72977-3-69268; Label: www.epa.gov/pesticides/chem_search/ppls/072977-00003-20100304.pdf
	Pure Hard Surface RTU: 0.003% silver + 4.846% citric acid 2-minute dwell time (covers all organisms except Athlete's Foot Fungus, which has a 5-minute dwell time)	Envirox, LLC EPA Reg. No. 72977-5-ZA-73912; Label: www.epa.gov/pesticides/chem_search/ppls/072977-00005-20110803.pdf
Silver + Hydrogen Peroxide (H_2O_2)	**H2ydro2xi Pro Force D** (also **Sanosil S010)** RTU: 0.01% silver nitrate + 5% hydrogen peroxide (H_2O_2) 10-minute dwell time for surface disinfecting	Core Products Co, Inc. EPA Reg. No. 84526-1-66515; Label (84526-1): www.epa.gov/pesticides/chem_search/ppls/084526-00001-20130711.pdf
PRODUCTS NOT RECOMMENDED DUE TO HEALTH AND ENVIRONMENTAL CONCERNS		
Ortho-phenylphenol (OPP)	**Airysol Brand Multi-Purpose Disinfectant Cleaner** RTU: 0.10% ortho-phenylphenol (OPP) + 0.08% ortho-benzyl para-chlorophenol 10-minute dwell time for surface disinfecting	Amrep, Inc. EPA Reg. No. 33176-6; Label: www.epa.gov/pesticides/chem_search/ppls/033176-00006-20091119.pdf
	Ecolab 23 TB Disinfectant & Deodorizer Concentrate: 3.55% ortho-phenylphenol (OPP) + 5.32% ortho-benzyl para-chlorophenol + 1.81% para-tert-amylphenol 1:128 (1 oz. per gallon) dilution for disinfecting most listed organisms 1:64 dilution for efficacy against Norovirus and Tb 10-minute dwell time for disinfecting most listed organisms	Ecolab, Inc. EPA Reg. No. 303-223-ZB-1677; Label: www.epa.gov/pesticides/chem_search/ppls/000303-00223-20120517.pdf
Peroxyacetic Acid (PAA) + Hydrogen Peroxide (H_2O_2)	**SaniDate 5.0** Concentrate: 5.3% peroxyacetic acid (PAA) + 23% hydrogen peroxide (H_2O_2) 1:256 (½ oz. per gallon) dilution 10-minute dwell time	Biosafe Systems, LLC EPA Reg. No. 70299-19; Label: www.epa.gov/pesticides/chem_search/ppls/070299-00019-20120706.pdf
Pine Oil	**Clorox Commercial Solutions Pine-Sol Brand Cleaner 1** RTU: 8.7% pine oil 10-minute dwell time *This product contains 1-5% isopropyl alcohol, according to its MSDS.*	Clorox Professional Products Company EPA Reg. No. 5813- 83-AA-67619 EPA Reg. No. 5813-83; Label: www.epa.gov/pesticides/chem_search/ppls/005813-00083-20111116.pdf
	Pinalen Concentrate: 5% pine oil 21 oz. per gallon dilution 10-minute dwell time for surface disinfecting *This product is only a limited efficacy disinfectant against gram-negative bacteria only.*	Industrias AlEn/White Cap, Inc. EPA Reg. No. 72138-4; Label: www.epa.gov/pesticides/chem_search/ppls/072138-00004-20120727.pdf
Quaternary Ammonium Chloride Compounds ("Quats")	**Clorox Disinfecting Wipes** RTU: Contain 0.29% quaternary ammonium chloride compounds, including: • 0.145% alkyl dimethyl benzyl ammonium chloride (ADBAC) • 0.145% didecyl dimethyl ammonium chloride (ADBAC) 4-minute dwell time for surface disinfecting *MSDS also lists isopropanol*	The Clorox Company EPA Reg. No. 5813-58; Label: www.epa.gov/pesticides/chem_search/ppls/005813-00058-20111201.pdf

Table 8 (cont'd)

Active Ingredient	Sample Disinfecting Products Evaluated	Company Name EPA Registration No.
PRODUCTS NOT RECOMMENDED DUE TO HEALTH AND ENVIRONMENTAL CONCERNS		
Quaternary Ammonium Chloride Compounds ("Quats")	**Enviro Care Neutral Disinfectant** Concentrate: 4.23% quaternary ammonium chloride compounds, including: • 2.54% didecyl dimethyl ammonium chloride (DDAC) • 1.69% alkyl dimethyl benzyl ammonium chloride (ADBAC) Disinfectant dilution is 1:64 (2 oz., per gallon) 10-minute dwell time for surface disinfecting	Rochester Midland Corporation/Lonza Corporation EPA Reg. No. 47371-131-ZA-527; Label: www.epa.gov/pesticides/chem_search/ppls/047371-00131-20130702.pdf
	Professional Lysol Brand Disinfectant Antibacterial Kitchen Cleaner RTU: 0.1076% alkyl dimethyl benzyl ammonium chloride (ADBAC) 10-minute dwell time for surface disinfecting	Reckitt Benckiser, Inc. EPA Reg. No. 777-66-ZG-675; Label: www.epa.gov/pesticides/chem_search/ppls/000777-00066-20120719.pdf
	Virex II/256 Concentrate: 16.894% quaternary ammonium chloride compounds, including: • 8.704% Didecyl dimethyl ammonium chloride (DDAC) • 8.190% Alkyl dimethyl benzyl ammonium chloride (ADBAC) Disinfectant dilution: 1:256 (1/2 oz. per gallon) 10-minute dwell time for surface disinfecting	Diversey, Inc. (Sealed Air) EPA Registration No. 70627-24; Label: www.epa.gov/pesticides/chem_search/ppls/070627-00024-20111216.pdf
Sodium Hypochlorite (Chlorine Bleach)	**Bleach-Rite Disinfecting Spray With Bleach** RTU: 0.94% sodium hypochlorite 1 minute dwell time for surface disinfecting (for most organisms)	Current Technologies, Inc. EPA Reg. No. 70590-2; Label: www.epa.gov/pesticides/chem_search/ppls/070590-00002-20120925.pdf
	Clorox Concentrated Regular Bleach 1 Concentrate: 8.25% sodium hypochlorite Disinfectant dilution: 1:32 (½ cup per gallon of water) (for most organisms) 5-minute dwell time for surface disinfecting (for most organisms) *10-minute dwell time for healthcare environment disinfection (including Pseudomonas aeruginosa). Also surface must be rinsed after disinfection.*	The Clorox Company EPA Registration No. 5813-100; Label: www.epa.gov/pesticides/chem_search/ppls/005813-00100-20130801.pdf
Thymol	**Antibac Antibacterial Kitchen Cleaner** (also called **Benefect Daily Cleaner**, **Cleanwell Daily Cleaner**, and **Seventh Generation Bathroom Cleaner)** RTU: 0.05% thymol 10-minute dwell time for surface disinfecting	Method Products, Inc. EPA Reg. No. 84683-3-AA-75277 (This product is registered under *Benefect Botanical Daily Cleaner Disinfectant* by OhSo Clean (84683-3); Label: www.epa.gov/pesticides/chem_search/ppls/084683-00003-20130829.pdf
	Thymo-cide Concentrate Concentrate: 13% thymol Disinfectant dilution: 1:256 (½ oz. per gallon of water) 10-minute dwell time for surface disinfecting	Wexford Labs, Inc. EPA Reg. No. 34810-18; Label: www.epa.gov/pesticides/chem_search/ppls/034810-00018-20110622.pdf

Table 9. Representative Non-food-contact Surface Sanitizers

Active Ingredient	Sample Non-Food-Contact Surface Sanitizing Products Evaluated	Company Name EPA Registration No.
	RECOMMENDED PRODUCTS	
Caprylic Acid (Octanoic Acid)	**65 Disinfecting Heavy-Duty Acid Bathroom Cleaner** Concentrate: 3.05% octanoic acid Sanitizing dilution: 1:40 dilution (3 oz. per gallon) 5-minute dwell time for non-food-contact surface sanitizing	Ecolab, Inc. EPA Reg. No. 1677-204; Label: www.epa.gov/pesticides/chem_search/ppls/001677-00204-20120426.pdf
Citric Acid	**Clean-Cide Ready to Use Germicidal Detergent** RTU: 0.6% citric acid 1-minute dwell time for non-food-contact surface sanitizing	Wexford Labs EPA Reg. No. 34810-35; Label: www.epa.gov/pesticides/chem_search/ppls/034810-00035-20121024.pdf
	Comet Disinfecting Bathroom Cleaner (also called **Comet Disinfecting-Sanitizing Bathroom Cleaner)** RTU: 6% citric acid 5-minute dwell time for non-food-contact surface sanitizing	Procter & Gamble EPA Reg. No. 3573- 54; Label: www.epa.gov/pesticides/chem_search/ppls/003573-00054-20130404.pdf
	Method Antibac Kitchen Cleaner (also called **Antibac Bathroom Cleaner**) RTU: 5% citric acid 5-minute dwell time for non-food-contact surface sanitizing	Method Products, Inc. EPA Reg. No. 75277-2; Label: www.epa.gov/pesticides/chem_search/ppls/075277-00002-20111101.pdf
Hydrogen Peroxide (H_2O_2), including Accelerated Hydrogen Peroxide (AHP ™)	**Alpha-HP Multi-Surface Disinfectant Cleaner (AHP ™)** Concentrate: 4.25% hydrogen peroxide (H_2O_2) Sanitizing dilution: 1:128 (1 oz. per gallon) 3-minute dwell time for non-food-contact surface sanitizing	Diversey, Inc. (Sealed Air) EPA Reg. No. 70627-62; Label: www.epa.gov/pesticides/chem_search/ppls/070627-00062-20110511.pdf
	Envirox Concentrate 117 (also called **$H_2Orange_2$ Concentrate 117**) Concentrate: 3.95% hydrogen peroxide (H_2O_2) Sanitizing dilution: 1:128 (10 oz. per gallon) 5-minute dwell time for non-food-contact surface sanitizing	Envirox, LLC EPA Reg. No. 69268-3; Label: www.epa.gov/pesticides/chem_search/ppls/069268-00002-20111123.pdf
	$H_2Orange_2$ 120 Ready to Use (also called **$H_2Orange_2$ One**) RTU: 1% hydrogen peroxide (H_2O_2) 5-minute dwell time for non-food-contact surface sanitizing	Envirox, LLC EPA Reg. No. 69268-3; Label: www.epa.gov/pesticides/chem_search/ppls/069268-00003-20050607.pdf
	Oxivir Five 16 (AHP ™) Concentrate: 4.25% hydrogen peroxide (H_2O_2) Sanitizing dilution: 1:128 (1 oz. per gallon) 3-minute dwell time for non-food-contact surface sanitizing	Diversey, Inc. (Sealed Air) EPA Reg. No. 70627-58; Label: http://www.epa.gov/pesticides/chem_search/ppls/070627-00058-20101119.pdf
	Oxivir Tb (AHP ™) RTU: 0.5% hydrogen peroxide (H_2O_2) 30-second dwell time for non-food-contact surface sanitizing	Diversey, Inc. (Sealed Air) EPA Reg. No. 70627-56; Label: www.epa.gov/pesticides/chem_search/ppls/070627-00056-20120920.pdf
Lactic Acid	**Lysol Brand III Disinfectant All Purpose Cleaner** (also called **Lysol Brand III Kills 99.9% of Virus & Bacteria All Purpose Cleaner**) RTU: 3.2% lactic acid 30-second dwell time for non-food-contact surface sanitizing	Reckitt Benckiser EPA Reg. # 777-100; Label: www.epa.gov/pesticides/chem_search/ppls/000777-00100-20120801.pdf
	Windex Multi-surface Antibacterial (also called **Windex Touch-Up Cleaner**) RTU: 0.18% lactic acid 10-second dwell time for non-food-contact surface sanitizing	S.C. Johnson & Son, Inc. EPA Reg. No. 4822-549; Label: www.epa.gov/pesticides/chem_search/ppls/004822-00549-20120619.pdf

Table 9 (Cont'd)

Active Ingredient	Sample Non-Food-Contact Surface Sanitizing Products Evaluated	Company Name EPA Registration No.
LIMITED USE PRODUCTS (RECOMMENDED FOR APPROPRIATE OUTBREAK SITUATIONS ONLY)		
Silver + Citric Acid	None of the evaluated silver + citric acid-containing products are registered as sanitizers. They are only registered as disinfectants.	
Silver + Hydrogen Peroxide (H_2O_2)	**H2ydro2xi Pro Force D** (also **Sanosil S010)** RTU: 0.01% silver nitrate + 5% hydrogen peroxide (H_2O_2) 5-minute dwell time for non-food-contact surface sanitizing	Core Products Co, Inc. EPA Reg. No. 84526-1-66515; Label (84526-1): www.epa.gov/pesticides/chem_search/ppls/084526-00001-20130711.pdf
PRODUCTS NOT RECOMMENDED DUE TO HEALTH AND ENVIRONMENTAL CONCERNS		
Ortho-phenylphenol (OPP)	None of the evaluated OPP-containing products are registered as sanitizers. They are only registered as disinfectants.	
Peroxyacetic Acid (PAA) + Hydrogen Peroxide (H_2O_2)	**SaniDate 5.0** Concentrate: 5.3% peroxyacetic acid (PAA) + 23% hydrogen peroxide (H_2O_2) Sanitizing dilution: 1.6 oz. per 5 gallons 1-minute dwell time for non-food-contact surface sanitizing	Biosafe Systems, LLC EPA Reg. No. 70299-19; Label: www.epa.gov/pesticides/chem_search/ppls/070299-00019-20120706.pdf
	SaniDate Ready to Use RTU: 0.108% Hydrogen Peroxide (H2O2) 5-minute dwell time *According to the manufacturer, this product also contains PAA below reporting requirements.*	Biosafe Systems; LLC EPA Reg. No. 70299-9; Label: www.epa.gov/pesticides/chem_search/ppls/070299-00009-20130621.pdf
Pine Oil	None of the pine oil products evaluated are registered as sanitizers. They are only registered as disinfectants.	
Quaternary Ammonium Chloride Compounds ("Quats")	**Clorox Disinfecting Wipes** RTU: Contain 0.29% quaternary ammonium chloride compounds, including: • 0.145% alkyl dimethyl benzyl ammonium chloride (ADBAC) • 0.145% didecyl dimethyl ammonium chloride (ADBAC) 30-second dwell time for non-food-contact surface sanitizing *MSDS also lists isopropanol*	The Clorox Company EPA Reg. No. 5813-58; Label: www.epa.gov/pesticides/chem_search/ppls/005813-00058-20111201.pdf
	Enviro Care Neutral Disinfectant Concentrate: 4.23% quaternary ammonium chloride compounds, including: • 2.54% Didecyl dimethyl ammonium chloride (DDAC) • 1.69 Alkyl dimethyl benzyl ammonium chloride (ADBAC) Sanitizing dilution 1:64 (2 oz., per gallon) 1-minute dwell time for non-food-contact surface sanitizing	Rochester Midland Corporation/Lonza Corporation EPA Reg. No. 47371-131-ZA-527; Label: www.epa.gov/pesticides/chem_search/ppls/047371-00131-20130702.pdf
	Professional Lysol Brand Disinfectant Antibacterial Kitchen Cleaner RTU: 0.1076% alkyl dimethyl benzyl ammonium chloride (ADBAC) 30-second dwell time for non-food-contact surface sanitizing	Reckitt Benckiser, Inc. EPA Reg. No. 777-66-ZG-675; Label: www.epa.gov/pesticides/chem_search/ppls/000777-00066-20120719.pdf
	Virex II/ 256 Concentrate: 16.894% quaternary ammonium chloride compounds, including: • 8.704% Didecyl dimethyl ammonium chloride (DDAC) • 8.190% Alkyl dimethyl benzyl ammonium chloride (ADBAC) Sanitizing dilution: 1:256 (1/2 oz. per gallon) 1-minute dwell time for non-food-contact surface sanitizing (which includes sanitizing efficacy against MRSA)	Diversey, Inc. (Sealed Air) EPA Registration No.70627-24; Label: www.epa.gov/pesticides/chem_search/ppls/070627-00024-20111216.pdf

Table 9 (Cont'd)

Active Ingredient	Sample Non-Food-Contact Surface Sanitizing Products Evaluated	Company Name EPA Registration No.
PRODUCTS NOT RECOMMENDED DUE TO HEALTH AND ENVIRONMENTAL CONCERNS		
Sodium Hypochlorite (Chlorine Bleach)	**Clorox Commercial Solutions Anywhere Hard Surface Sanitizing Spray** RTU: 0.0095% sodium hypochlorite 1-minute dwell time for non-food-contact surface sanitizing	Clorox Professional Products Company EPA Reg. No. 67619-14; Label: www.epa.gov/pesticides/chem_search/ppls/067619-00014-20111006.pdf
	Clorox Concentrated Regular Bleach 1 Concentrate: 8.25% sodium hypochlorite Sanitizing dilution: 1:32 (½ cup per gallon) 30-second dwell time for non-food-contact surface sanitizing *Food-contact surface must be rinsed with potable water after sanitizing with bleach at this concentration.*	The Clorox Company EPA Registration No. 5813-100; Label: www.epa.gov/pesticides/chem_search/ppls/005813-00100-20130801.pdf
Thymol	**Antibac Antibacterial Kitchen Cleaner** (also called **Seventh Generation Bathroom Cleaner)** RTU: 0.05% thymol 30-second dwell time for non-food-contact surface sanitizing	Method Products, Inc. EPA Reg. No. 84683-3-AA-75277 (This product is registered under *Benefect Botanical Daily Cleaner Disinfectant* by OhSo Clean (84683-3); Label: www.epa.gov/pesticides/chem_search/ppls/084683-00003-20130829.pdf

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Safely Mixing Disinfectant

The California Board of Barbering and Cosmetology requires that all non-electrical tools be disinfected with an EPA registered disinfectant with demonstrated bactericidal, fungicidal, and virucidal activity, therefore when you work around chemical disinfectants, it is important to take steps to protect your health.

To effectively clean non electrical tools:

- Remove all visible debris from your tool.
- Wash the tools with soap or detergent and water.
- Completely dry the tools with a paper towel.

Please mix _____ounces of disinfectant with _____ounces of water.
(Always follow manufactures suggested mixing instructions.)

- Totally immerse the tools in the disinfectant.
- Leave in the disinfectant for at least 10 minutes or according to the manufacturer's instructions.
- Place clean tools in a clean, covered place that is labeled "Clean" or "Disinfected".

Use safe work practices

- Keep containers closed when you're not using them so the product doesn't spill or get into the air.
- Check that all containers of chemicals are properly labeled of their contents.
- Don't eat or drink in your work area as your food or drink may be contaminated.
- Wash your hands after working with chemicals, even if you wore gloves.
- Remove tools from the disinfectant with tongs.

Ventilate the room

- Always work in a well-ventilated area. If there's no ventilation system, open windows and doors to bring in fresh air from outside.

Use protective equipment

- Wear gloves designed to protect your skin from the particular chemicals you're using.
- Wear safety goggles when mixing chemicals to protect your eyes from splashes.

Know your rights as a worker

- Employers must provide workers with Safety Data Sheets if requested.
- Employers must train workers on the hazards of the chemicals they are working with and how to protect themselves from the hazards.

Report any health problems

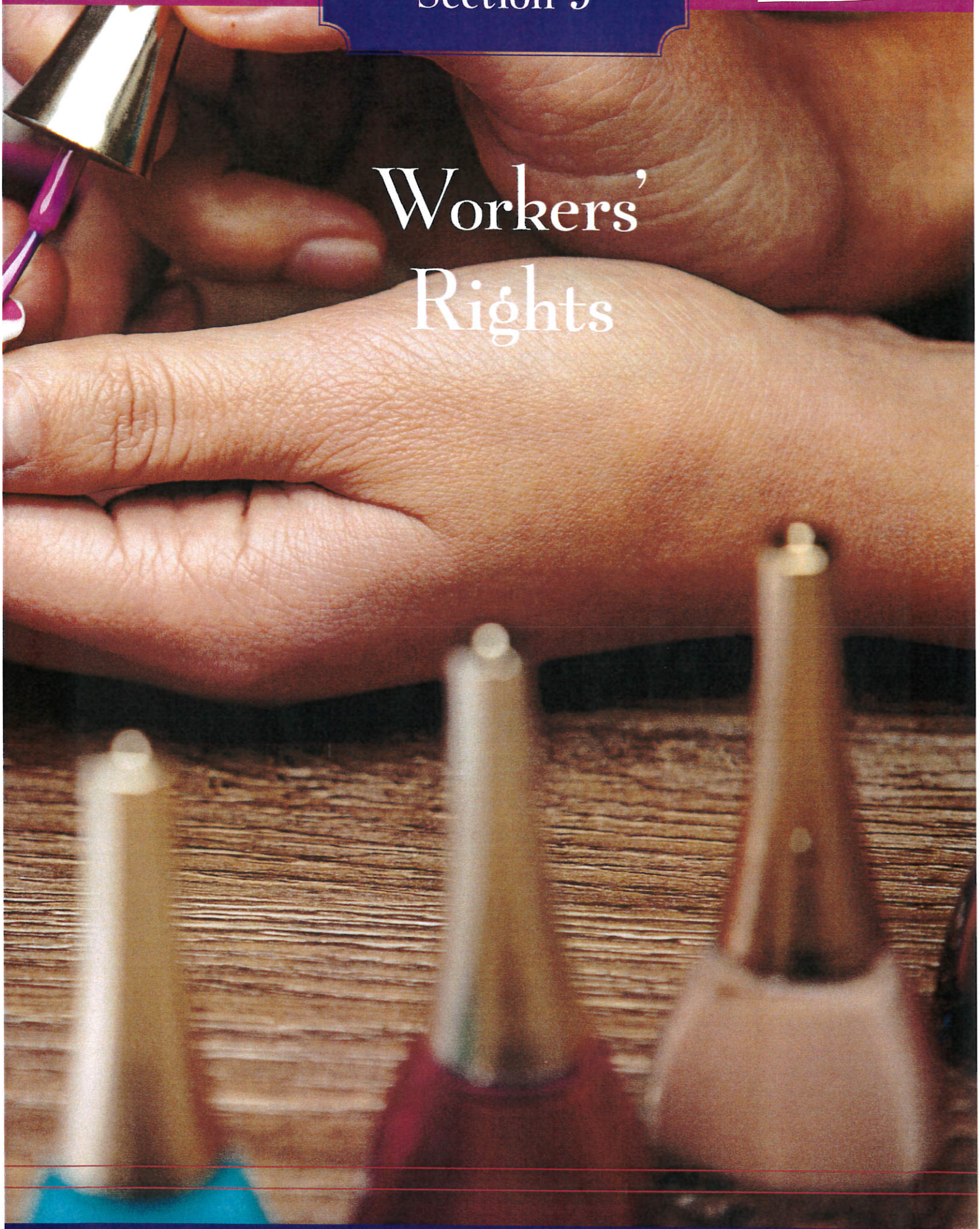
- Speak up if you are experiencing symptoms of health effects so your employer can help alleviate the problem and let other employees know.
- Seek advice from your doctor on how serious your issues are and how they should be handled.
- You have the right to report health hazards to Cal/OSHA by filing a complaint.

For additional Health and Safety tips, see www.BarberCosmo.ca.gov "CASafeSalon".

Section 9

Agenda Item # 6

Workers' Rights



LEARNING OBJECTIVES

Section 9

Workers' Rights

After completing this section you will be able to:

- Identify your worker classification.
- Understand basic workers' rights and what options are available to you if those rights are being withheld.
- Identify agencies available for workers' rights assistance.

Today's lesson is about workers' rights. The barbering and cosmetology industry offers a number of employment options. A future professional may decide to be an employee of a cutting edge salon or shop, be an independent contractor (booth renter), or maybe own his or her own salon or shop. Whichever direction your career takes you in, it is important to know your workers' rights and responsibilities.

Workers in every state have certain defined rights that cannot be violated, including the right to a fair wage, safe working conditions, and reasonable time off. It is important for all workers to know their rights before taking any job or know these rights before becoming a salon or shop owner.

The purpose of workers' rights is to ensure that all employees are treated equally, paid a fair wage, and not subjected to any form of harassment within the workplace. Today we will summarize some basic rights you are entitled to and what action you should take if you are not receiving these rights.

Workers' Rights and Responsibilities

Knowing your worker classification is essential in knowing what rights you are entitled to. For instance, your rights as an employee of a salon are much different than the rights of the salon owner. Let's take a moment to discuss the various worker classifications found in the barbering and beauty industry.

KNOW YOUR WORKER CLASSIFICATION

- **Salon Owner**
  Owners are in business for themselves. Salon owners are responsible for reporting all income and expenses to the Internal Revenue Service (IRS), withholding employment taxes (if they have employees), and paying all taxes due. Salon owners are responsible for classifying workers correctly as employees or independent contractors (booth renters).

Example

Tiffany owns Clips Barbershop. Tiffany purchases all the supplies used in the Barbershop and sets the shop's hours of operation. She has determined the cost of services provided and menu of services. Since the barbershop has six barbers, she completes an employee work schedule. She arranges training for the employees so they can keep up-to-date with current trends. She regularly offers technical assistance to her team members. Tiffany sends each of her employees a W-2 because she is the owner of the salon.

- **Independent Contractor (Booth Renter)**
  Independent contractors (booth renters) are licensees who rent or lease a workstation in someone else's salon or shop. They are self-employed and are responsible for record keeping, purchasing supplies, setting their work hours, and menu of services, and collecting their own client payments. They hold a key to the shop and can come and go depending on workflow. They are financially responsible for the profit or loss in their own business and receive all income generated from their work. They are responsible for the timely filing of their tax returns and payment of taxes related to their business. An independent contractor (booth renter) may work inside of a shop or salon owned by a salon owner but maintains a separate identity. An independent contractor (booth renter) works for himself or herself and is not subject to the will or control of the salon owner.

Example

Marisol is a manicurist and esthetician who has a business contract with two large salons where she provides her services. In her contracts, she is provided with a workstation for which she pays $600 per month to each salon. She keeps her own appointment book and sets her own hours of operation at her convenience and has created her own menu of services. She has been provided with a key to the shop. She provides her own tools, nail polish, and makeup. Marisol handles her own payments from customers and is responsible for filing and paying tax on her income and tips. Marisol is an independent contractor booth renter.

Note: If the business contract specifies that Marisol must:

- Work four days a week, 9 a.m. to 5 p.m.
- Only use the products the salon markets
- Provide only the services listed on the shop's menu of services
- Charge the prices established by the salon owner

Then Marisol may no longer be an independent contractor booth renter but now may be considered an employee.

- **Employee**
  Employees receive a W-2 form from their employer for wages earned and are responsible for reporting their tips to their employer. They follow a work schedule established by the salon owner. They offer services in the salon that have been determined by the salon owner. They are subject to the will and control of the employer, who has the authority to tell him or her what to do and how to do it.

Example

Patricia works at Blaze Hair Salon owned by Judy. Patricia is told to be at work Tuesday through Saturday, 9 a.m. - 5 p.m. Patricia does not purchase the products used on her clients, rather she uses the products supplied by the shop. The shop has a receptionist who books Patricia's appointments. Patricia would prefer to only do haircuts, however, the shop is a full service shop and so Patricia must provide chemical services to her clients when requested. Judy observes the work that Patricia does and provides technical direction when needed. Patricia reports all her tips to Judy. Patricia is Judy's employee.

Now that you understand each worker classification, let's discuss tax obligations. Read the worker classification below and take a few moments to review what may be required of you by the IRS. The summary provided below is not all inclusive. You will want to contact the IRS, legal counsel, and an accountant representative for detailed information regarding tax obligations.

Additional information on tax obligations can be found in the training materials file. You will want to keep the information provided as reference material as you progress in your career.

KNOW YOUR OBLIGATIONS

- **Salon Owner**
  A salon owner with employees may:
  - ✔ File self-employment tax on all employees
  - ✔ Prepare and file a W-2 form wage and tax statement to report to the IRS wages, tips, and other compensation paid to all employees
  - ✔ File Social Security and Medicare tax withholdings on all employees

- ✔ Maintain workers' compensation insurance on all employees
- ✔ Maintain unemployment insurance on all employees
- ✔ Collect and pay sales taxes
- ✔ Be responsible for state and local taxes

- **Independent Contractor (Booth Renter)**
  In addition to reviewing the salon owner tax obligations stated above, as an independent contractor you may complete a W-9 form (Request for Taxpayer Identification Number and Certification).
- **Employee**
  As an employee, you will receive a W-2 form from each employer you have worked for during the year. Employers issue these forms in January of the following year. The W-2 form combines all wages and reported tips. It shows the amount of federal taxes withheld and paid throughout the year.

Now that you have an understanding of your worker classification and tax obligation, let's review.

Questions for Review

An independent contractor (booth renter):

A) Uses the salons products, pays rent, calls the owner to see if she has to come to work.

B) Uses her own products, has a key to the shop, pays rent, books her own appointments.

C) Has the receptionist book her appointments, pays rent, has to check the work schedule to see when the owner wants her in the shop.

The purpose of workers' rights is to:

A) Ensure that all employees are treated equally, paid a fair wage and are not subjected to any form of harassment within the workplace.

B) Put the power back in the hands of the people who do all the work.

C) Make sure people are earning enough to make a fair living.

To understand all of my tax obligations I should contact:

A) The Department of Industrial Relations

B) The Labor Commissioner

C) The Internal Revenue Service

For answers to all questions, please refer to your exam booklet.

Now that you know your worker classification and tax obligation, let's take a few minutes to discuss income. Generally speaking, as a future professional working as an employee, your income will probably be earned in three different ways: tips, wages (or salary), and commission on product sales.

Minimum Wage

Effective January 1, 2016, the State mandated minimum wage for California is $10 per hour. If you live in a county or city that has adopted a higher mandated minimum wage, your employer is required to pay the higher mandated minimum wage.

To find out the minimum wage amount for your city or county go to:

www.minimum-wage.org/wage-by-state.asp

or search online for:

City/County, Calfornia+minimum wage amount

The minimum wage requirement cannot be waived by any work agreement made between the employee and the shop owner. In other words, an employee cannot agree to work for just tips and no minimum wage. Employers are expected to pay the minimum hourly wage, and the employee may keep his or her tips. Tips do not belong to the shop owner. If you find that you have not been paid the mandated minimum wage and the shop owner has made no efforts to rectify the situation, you may file a wage claim with the Division of Labor Standards or file a lawsuit against your employer for lost wages.

Overtime

An employer who requires or permits an employee to work overtime is generally required to pay the employee overtime at time and one half of the regular rate of pay for all hours worked in excess of 40 per week. The overtime requirement may not be waived by an agreement between the employer and employees. An announcement by the employer that no overtime work will be permitted or that overtime work will not be paid for unless authorized in advance also will not impair the employee's right to compensation. To gain additional information, call (866) 487-9243 or visit the U.S. Department of Labor Wage and Hour Division website: **www.wagehour.dol.gov**

Tips are taxable and must be reported to your employer.

Tips

Tips are not gifts. If you have provided a service to a customer and they have paid you more than what you have stated is your fee, then that additional amount is a tip. Tips are taxable and must be reported to your employer. For additional information regarding how to report tips, please see: **https://www.irs.gov/uac/About-Publication-531**.

Salon/shop owners will want to access the training materials file and review the IRS publication, *Tips on Tips*.

Tips belong to you, the service provider. Unlike under federal regulations, in California an employer cannot use an employee's tips as a credit toward its obligation to pay the minimum wage. California law requires that employees receive the minimum wage plus any tips left for them by patrons of the employer's business. See Labor Code Section 351.

You may be wondering what can I do if my employer withholds my tips or refuses to pay me minimum wage or overtime? What if I tell my employer that I am going to report him or her to the Labor Commissioner's Office and he or she fires me? Is there anything I can do?

You have options if an employer withholds wages or tips. You have the right to file a wage claim or file a lawsuit against your employer for lost wages.

Filing a Wage Claim

An employee or former employee may file an INDIVIDUAL wage claim to recover:

- Unpaid wages, including overtime, commissions, and bonuses
- Wages paid by check issued with insufficient funds
- Final paycheck not received
- Unused vacation hours that were not paid upon termination of the employment relationship, e.g., left job, discharge, or layoff
- Unauthorized deductions from paychecks
- Unpaid/nonreimbursed business expenses
- Reporting time pay/split shift premiums
- Failure to provide a meal and/or rest period in accordance with the applicable Industrial Welfare Commission Order
- Liquidated damages for failure to receive minimum wage for each hour worked
- Waiting time penalties for failure to receive final wages timely upon separation of employment
- Penalties for paycheck(s) that have bounced or are not negotiable within 30 days of receipt. Penalties for employer's failure to allow inspection or copying of payroll records within 21 days of request.
- Sick Leave Pay for time accrued and used for which you were not paid (effective July 1, 2015)

For an in-depth discussion on how to file a wage claim and the procedures and forms involved, visit: **www.dir.ca.gov/dlse/faq_minimumwage.htm**.

A copy of the publication *Recovering Your Unpaid Wages with the California Labor Commissioner's Office* can be found in the Training Materials file.

Discrimination or Retaliation

If your employer discriminates or retaliates against you in any manner whatsoever – for example, he fires you because you asked him why you weren't being paid the minimum wage, or because you file a claim or threaten to file a claim with the Labor Commissioner – you can file a discrimination/retaliation complaint with the Labor Commissioner's Office (also called the Division of Labor Standards Enforcement). In the alternative, you can file a lawsuit in court against your employer. For more details, please see the booklet located in the training materials file, *Health and Safety Rights: Facts for California Workers*.

As an employee in the State of California, you have the right to speak to representatives of the office of the California Labor Commissioner or any other government or law enforcement agency about any issues affecting your working conditions. Your employer cannot fire, demote, suspend, or discipline you for answering questions or providing information to a government agency.

If your employer discriminates or retaliates against you, you can file a discrimination/ retaliation complaint.

Filing a Lawsuit

If you decide to file a lawsuit for lost wages, you should consult with legal representation on how to proceed.

Workers' Compensation

Workers' compensation benefits are designed to provide employees with the medical treatment necessary to recover from work-related injuries or illness, partially replace wages that are lost while recovering, and help the employee return to work. Workers' compensation benefits do not include damages for pain and suffering or punitive damages.

The Division of Workers' Compensation (DWC) monitors the administration of workers' compensation claims and provides administrative and judicial services to assist in resolving disputes that arise in connection with claims for workers' compensation benefits.

California employers are required by law to have workers' compensation insurance, even if they only have one employee. If your employees get hurt or sick because of work, you are required to pay for workers' compensation benefits. Workers' compensation insurance provides six basic benefits: medical care, temporary disability benefits, permanent disability benefits, supplemental job displacement benefits, or vocational rehabilitation and death benefits.

DWC's mission is to minimize the adverse impact of work-related injuries on California employees and employers. There are several offices throughout the State. Benefits Assistance and Enforcement Phone: (800) 736-7401

- DWC contact information: **www.dir.ca.gov/dwc/ContactDWC.htm**
- For locations: **www.dir.ca.gov/dwc/landA.html**

The Family Medical Leave Act

The Family Medical Leave Act (FMLA) applies to employers who employ 50 or more employees. You may be eligible for this benefit if you work for a large chain salon. Eligible employees are entitled to take unpaid, job-protected leave with continuation of group health insurance coverage for up to 12 work weeks in a 12-month period for:

- The birth of a newborn child
- The placement and care of a child for adoption or foster care
- For the serious health condition of the employee or the employee's spouse, child, or parent
- For qualifying needs arising out of a covered military member's active duty status

And 26 work weeks of leave during a single 12-month period to care for a covered service member with a serious injury or illness.

For information regarding FMLA visit: **www.dol.gov/whd/fmla/index.htm**.

Immigrant Workers

The Department of Labor's Wage and Hour Division continues to enforce the Fair Labor Standards Act without regard to whether an employee is documented or undocumented. Regardless of your citizenship status, employees have the right to work for a fair wage, keep their tips, and have a safe, healthy workplace.

Agency Contact Information:

LABOR COMMISSIONER'S OFFICE (also known as the Division of Labor Standards Enforcement [DLSE])

The Labor Commissioner provides information about employment rights, discrimination, and wrongful firings. The Labor Commissioner's Office also takes worker complaints about discrimination for health and safety activity and will investigates them. There are several locations throughout the State.

Website: **www.dir.ca.gov/dlse/dlse.html**

For locations and contact information: **www.dir.ca.gov/dlse/DistrictOffices.htm**

E-mail: **dlse2@dir.ca.gov**

INTERNAL REVENUE SERVICE

Many tax questions can be answered online at the IRS website.

Website: **https://www.irs.gov**

If you require a face-to-face meeting, you can find your local office information at: **https://www.irs.gov/uac/Contact-My-Local-Office-in-California**

IRS SMALL BUSINESS AND SELF EMPLOYED TAX CENTER

Website: **https://www.irs.gov/Businesses/Small-Businesses-Self-Employed**

State of California Franchise Tax Board

Website: **https://www.ftb.ca.gov/**

Monday-Friday, 7 a.m.-5 p.m.	(800) 852-5711
24/7 Automated Support	(800) 338-0505
Outside the United States	(916) 845-6500
TTY/TDD	(800) 822-6268

BOARD OF EQUALIZATION

General Tax Questions (Toll-free)	(800) 400-7115
Outside the United States	(916) 445-6362
California Relay Service (CRS)	711 (for hearing and speech disabilities)

EMPLOYMENT DEVELOPMENT DEPARTMENT (EDD)

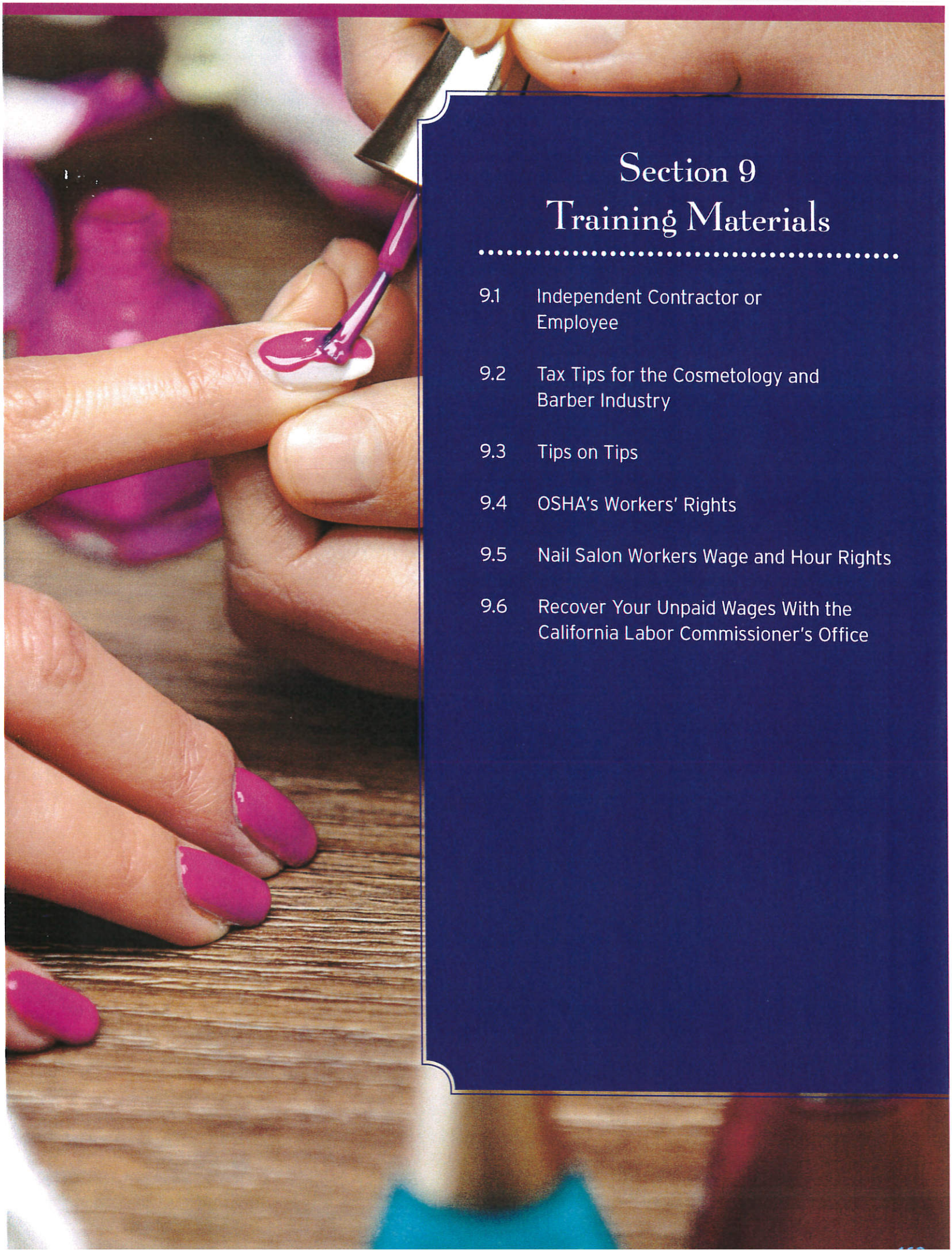
Website: **www.edd.ca.gov/About_EDD/Contact_EDD.htm**
Ask EDD: **https://askedd.edd.ca.gov/**
Department Directory: **http://www.edd.ca.gov/About_EDD/Department_Directory.htm**

In Conclusion

In this lesson you learned about some basic workers' rights, what to do, and whom to contact if you are not receiving those rights. Take a moment and review the materials located in the Training Materials file. You will want to keep these materials close at hand for easy reference. Please note that the materials provided in this lesson are not all inclusive. Always make it a priority to stay updated on your basic rights by contacting the agencies listed on the previous page.

You have reached the end of California State Board of Barbering and Cosmetology's Health and Safety Curriculum. Hopefully you have gained a wealth of knowledge that you will be able to use in your future as a licensee. Thank you for working with the Board of Barbering and Cosmetology so that all licensees and consumers can have a safe, healthy salon or shop experience.

Notes



Section 9
Training Materials

9.1 Independent Contractor or Employee

9.2 Tax Tips for the Cosmetology and Barber Industry

9.3 Tips on Tips

9.4 OSHA's Workers' Rights

9.5 Nail Salon Workers Wage and Hour Rights

9.6 Recover Your Unpaid Wages With the California Labor Commissioner's Office

IRS Tax Publications

If you are not sure whether you are an employee or an independent contractor, get Form SS-8, Determination of Worker Status for Purposes of Federal Employment Taxes and Income Tax Withholding. Publication 15-A, Employer's Supplemental Tax Guide, provides additional information on independent contractor status.

IRS Electronic Services

You can download and print IRS publications, forms, and other tax information materials on the Internet at www.irs.gov. You can also call the IRS at 1-800-829-3676 (1-800-TAX-FORM) to order free tax publications and forms.

Publication 1796, 2007 IRS Tax Products CD (Final Release), containing current and prior year tax publications and forms, can be purchased from the National Technical Information Service (NTIS). You can order Publication 1796 toll-free by calling 1-877-233-6767 or via the Internet at www.irs.gov/cdorders.

Call 1-800-829-4933, the Business and Speciality Tax Line, if you have questions related to employment tax issues.

IRS

Publication 1779 (Rev. 3-2012) Catalog Number 16134L
Department of the Treasury **Internal Revenue Service** www.irs.gov

Independent Contractor *or* Employee

Which are you?

For federal tax purposes, this is an important distinction. Worker classification affects how you pay your federal income tax, social security and Medicare taxes, and how you file your tax return. Classification affects your eligibility for social security and Medicare benefits, employer provided benefits and your tax responsibilities. If you aren't sure of your work status, you should find out now. This brochure can help you.

The courts have considered many facts in deciding whether a worker is an independent contractor or an employee. These relevant facts fall into three main categories: behavioral control; financial control; and relationship of the parties. In each case, it is very important to consider all the facts – no single fact provides the answer. Carefully review the following definitions.

Behavioral Control

These facts show whether there is a right to direct or control how the worker does the work. A worker is an employee when the business has the right to direct and control the worker. The business does not have to actually direct or control the way the work is done – as long as the employer has the right to direct and control the work. For example:

Instructions – if you receive extensive instructions on how work is to be done, this suggests that you are an employee. Instructions can cover a wide range of topics, for example:

- how, when, or where to do the work
- what tools or equipment to use
- what assistants to hire to help with the work
- where to purchase supplies and services

If you receive less extensive instructions about what should be done, but not how it should be done, you may be an independent contractor. For instance, instructions about time and place may be less important than directions on how the work is performed.

Training – if the business provides you with training about required procedures and methods, this indicates that the business wants the work done in a certain way, and this suggests that you may be an employee.

Financial Control

These facts show whether there is a right to direct or control the business part of the work. For example:

Significant Investment – if you have a significant investment in your work, you may be an independent contractor. While there is no precise dollar test, the investment must have substance. However, a significant investment is not necessary to be an independent contractor.

Expenses – if you are not reimbursed for some or all business expenses, then you may be an independent contractor, especially if your unreimbursed business expenses are high.

Opportunity for Profit or Loss – if you can realize a profit or incur a loss, this suggests that you are in business for yourself and that you may be an independent contractor.

Relationship of the Parties

These are facts that illustrate how the business and the worker perceive their relationship. For example:

Employee Benefits – if you receive benefits, such as insurance, pension, or paid leave, this is an indication that you may be an employee. If you do not receive benefits, however, you could be either an employee or an independent contractor.

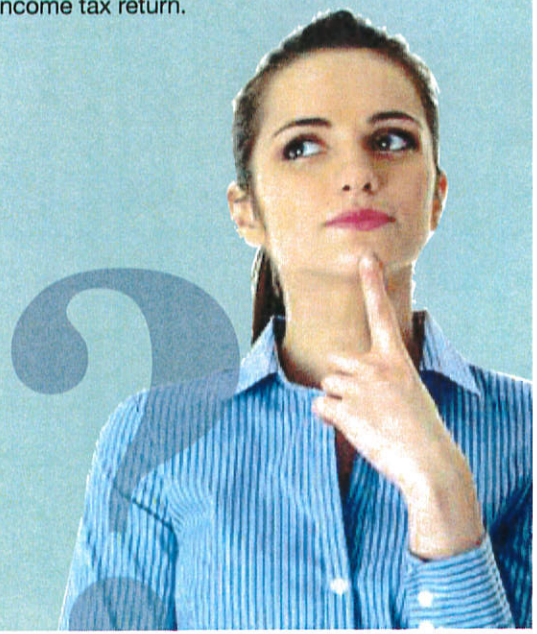
Written Contracts – a written contract may show what both you and the business intend. This may be very significant if it is difficult, if not impossible, to determine status based on other facts.

When You Are an Employee...

- Your employer must withhold income tax and your portion of social security and Medicare taxes. Also, your employer is responsible for paying social security, Medicare, and unemployment (FUTA) taxes on your wages. Your employer must give you a Form W-2, Wage and Tax Statement, showing the amount of taxes withheld from your pay.
- You may deduct unreimbursed employee business expenses on Schedule A of your income tax return, but only if you itemize deductions and they total more than two percent of your adjusted gross income.

When You Are an Independent Contractor...

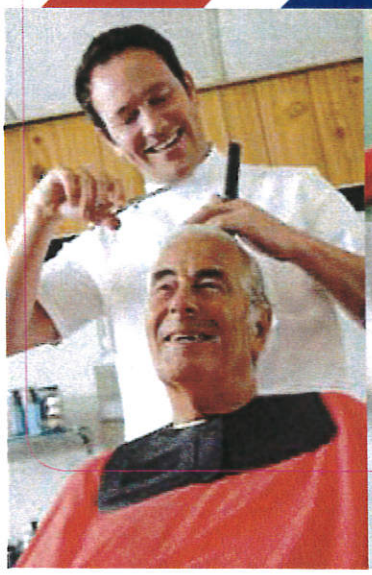
- The business may be required to give you Form 1099-MISC, Miscellaneous Income, to report what it has paid to you.
- You are responsible for paying your own income tax and self-employment tax (Self-Employment Contributions Act – SECA). The business does not withhold taxes from your pay. You may need to make estimated tax payments during the year to cover your tax liabilities.
- You may deduct business expenses on Schedule C of your income tax return.



IRS

Tax Tips for the

COSMETOLOGY & BARBER INDUSTRY



Whether a shop owner, an employee, or a booth renter (independent contractor), you need to know your federal tax responsibilities, including how to report your income and tips you receive from your customers.

The most common forms of business are the sole proprietorship, partnership, and corporation. Your form of business determines which income tax return form you have to file. Publication 583, *Starting a Business and Keeping Records*, available free from the IRS, can help you decide.

The purpose of this publication is to describe some of the Federal tax responsibilities that owners and workers must address each day.

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Shop Owner

As a shop owner you can elect to structure your business in different forms. You can choose to operate your business as a sole proprietorship, partnership, or as a corporation. Your business may have employees who work for you or you may decide to operate without employees. Another common arrangement is renting space to another individual who operates an independent business. This is commonly referred to as a booth renter and will be discussed later in this publication.

It doesn't matter which business structure you choose; there are basic principles that do not change. Income received in the course of your business is taxable income and must be reported on the appropriate income tax return form.

If you operate your business without employees, where you are the only worker, then your federal tax responsibilities would be limited to reporting your income earned (including tip income) and expenses on the appropriate tax form. For example, a sole proprietorship would file Form 1040, using Schedule C to report business income and expenses and Schedule SE to report Self-Employment tax.

Once you decide to hire workers you must make a determination if they are your employees or if they will operate their own independent business (booth renters).

Who is an employee?

Simply stated, an employee is an individual who works at the control and direction of another. It is important to remember that as the employer you do not have to control the worker all of the time, you simply have to have the right to control. The following questions are helpful in determining if someone is your employee or an independent contractor:

- As the owner, do you establish the hours the shop is open?
- Who makes the determination regarding who works specific shifts?
- Do the workers purchase their own supplies with their own money?
- Who determines the prices charged to customers?
- Do the workers each set their own appointments?
- Who is responsible for expenses, such as insurance, advertising, etc.?

These questions are not all inclusive, but they will provide insight as to whether you are their employer. If you give extensive instructions as to how, when, or where to do the work and where to purchase the supplies, then more than likely you are the employer and the worker is your employee. For additional information, see Publication 1779, *Independent Contractor or Employee?*

Shop Owner/Employer Tax Responsibilities

As an employer, federal law requires you to withhold taxes from your employees' paychecks. Depending on the wages, you must take out of your employees' paychecks certain amounts for federal income tax, social security tax, and Medicare tax. You must then pay any liability for the employer's share of social security and Medicare taxes. This portion, your share, is not withheld from employees. You may also be required to pay unemployment (FUTA) taxes on these wages. In addition to reporting all taxable income on the appropriate income tax form, you would also have the responsibility for issuing Form W-2, *Wage and Tax Statement.*

The wages paid, along with the taxes withheld, are reported on a quarterly basis by filing Form 941, *Employer's QUARTERLY Federal Tax Return.* You may also be required to file an annual form to pay Federal unemployment taxes. This is done by filing Form 940, *Employer's Annual Federal Unemployment (FUTA) Tax Return.* Form W-2 is furnished to employees after the close of the calendar year, but no later than January 31st.

For more information about payroll taxes, see Publication 15 (Circular E), Employer's Tax Guide that you can download at **www.irs.gov/businesses** and click on the Employment Taxes link.

Booth Renters

A booth renter is someone who leases space from an existing business and operates their own business as an independent contractor. As a booth renter, or independent contractor, you are responsible for your own record-keeping and timely filing of returns and payments of taxes related to your business.

Indications that you are an independent contractor include, but are not limited to:

- Having a key to the establishment
- Setting your own hours
- Purchasing your own products
- Having your own phone number and business name
- Determining the prices to be charged

If these factors are not present, then you are likely an employee of the business who is providing the space to you.

If the above factors are present, then as an independent contractor you would be responsible for your federal taxes. Your tax responsibilities would include:

- Reporting all income (including tips) on the appropriate income tax return form, such as Form 1040, using Schedule C or Schedule C-EZ. Social Security and Medicare Taxes are reported on Schedule SE.
- As a booth renter you must issue Form 1099-MISC for business rent paid of more than $600 or more to non-corporate landlords each year.
- Issue Form 1099 MISC or W-2 to workers you hire or employ.

As a booth renter, or independent contractor, you may need to make estimated tax payments during the year to cover your tax liabilities. This is because as a booth renter (independent contractor), the business does not withhold taxes from your pay. Estimated tax is the method used to pay tax on income that is not subject to withholding, such as earnings from self-employment you receive as a booth renter.

Estimated tax payments are made each quarter using Form 1040-ES, Estimated Tax for Individuals. For additional information regarding tax withholding and estimated tax, see Publication 505, *Tax Withholding and Estimated Tax*.

If you hire others to work for you it is possible that these workers would be your employees. As a booth renter you can hire others to work for you as your employees. If you have employees in your business, you would be required to deduct from their pay social security, Medicare and federal income taxes. This would require you to file quarterly Forms 941, as well as an annual Form 940. You would also be required to file Forms W-2 for each employee who worked for you during the calendar year.

Tip Income Responsibilities for the Employer or Booth Renter

Tips are considered taxable income and are subject to Federal income taxes. Tips that your employee receives from customers are generally subject to withholding. Your employees must report tips they receive to you by the 10th of the month after the month that the tips are received. The report should include tips that you paid over to the employee from customers that added the tip to their charged or debit card receipt and tips that the employee received directly from customers.

You must collect income tax, employee social security tax, and employee Medicare tax on the employee's tips. For more information on the taxation of tips, see Publication 15, *Circular E – Employer's Tax Guide*, available free from the IRS.

Employees are required by law to keep a daily record of all tips they receive. The IRS furnishes free, Publication 1244, *Employee's Daily Record of Tips and Report to Employer*, which employees can use to record their tips on a daily basis. Publication 1244 includes Form 4070, *Employee's Report of Tips to Employer* and Form 4070A, *Employee's Daily Record of Tips.*

If you operate your own business as a sole proprietor or booth renter, any tips received in the normal course of your business must be reported in gross receipts, and then reported on the appropriate income tax form.

See Publication 531, *Reporting Tip Income*, for more information regarding tip income reporting.

Employee Tip Reporting Responsibilities

All tips you receive are income and are subject to federal income tax. You must include in gross income all tips you receive directly from customers, charged tips paid to you by your employer, and your share of any tips you receive under a tip-splitting or tip-pooling arrangement.

You can use Form 4070A, Employee's Daily Record of Tips to record your tips, or any diary of your choosing. You can also keep copies of documents that show your tips, such as customer receipts and credit card slips. Publication 1244 includes Form 4070, Employee's Report of Tips to Employer and Form 4070A, Employee's Daily Record of Tips, available free from the IRS. You can use an electronic system provided by your employer to record your daily tips. If you do, you must receive and keep a copy of this record.

Tip Rate Determination and Education Program (TRD/EP)

Employers may participate in the Tip Rate Determination and Education program. The program consists of various voluntary agreements designed for specific industries where tipping is customary. There is one designed specifically for this industry. TRAC, Tip Reporting Alternative Commitment, has characteristics unique to the Cosmetology and Barber industry.

The IRS developed this program to encourage voluntary compliance with tip income reporting through outreach and education and using enforcement actions as a last resort.

To learn more about the voluntary agreement program, access the irs.gov website at **Market Segment Understandings (MSU)**

You can get copies of the forms and publications referenced in this publication, by searching for them by the form or title shown below at the IRS website at: **www.irs.gov**.

References

Form 941	*Employer's QUARTERLY Federal Tax Return*
Form 940	*Employer's Annual Federal Unemployment (FUTA) Tax Return*
Form 1040-ES	*Estimated Tax for Individuals*
Publication 15	*Circular E – Employer's Tax Guide*
Publication 505	*Tax Withholding and Estimated Tax*
Publication 531	*Reporting Tip Income*
Publication 583	*Starting a Business and Keeping Records*
Publication 1244	*Employee's Daily Record of Tips and Report to Employer*
Publication 1779	*Independent Contractor or Employee*
Publication 3144	*Tips on Tips/for Employees*
Publication 3148	*Tips on Tips/for Employers*

Whatever business structure you choose, remember your tax obligations, stay in compliance with the law, and enjoy the benefits!

Notes

Publication 4902

Tax Tips for the **Cosmetology & Barber Industry**

IRS

Publication 4902 (2-2011) Catalog Number 56037B
Department of the Treasury **Internal Revenue Service** www.irs.gov

IRS

Tips on Tips

A Guide to Tip Income Reporting for Employers in Businesses where Tip Income is Customary

If you are an employer of an employee who receives tip income, this guide is for you.

The Internal Revenue Service (IRS) began its Tip Rate Determination/Education Program (TRD/EP) in October 1993 for businesses where tip income is customary. The objective of the Program has been to improve and ensure compliance by employers and employees with statutory provisions relating to tip income.

The Program of Tip Reporting

What tip reporting options are available?

- Tip Rate Determination Agreement (TRDA)
- Tip Reporting Alternative Commitment (TRAC)
- Institute your own reporting system to comply with the tax law.

Under the Tip Rate Determination/ Education Program (TRD/EP), the employer may enter into a TRDA or a TRAC arrangement, depending on the specific business. The IRS will assist applicants in understanding and meeting the requirements for participation. The next pages show how these two arrangements differ.

How does the program benefit my employees?

There are a number of reasons why an employee should report all of his/her tip income:

- Increased income may improve financial approval when applying for mortgage, car, and other loans
- Increased social security and Medicare benefits (the more you pay, the greater the benefits)
- Increased unemployment compensation benefits
- Increased employee pension, annuity, or 401(k) participation (if applicable)
- Increased workers' compensation benefits, should your employees get hurt on the job

How To Get Your Program Underway

How To Apply

To enter into one of the arrangements, you may call 1-800-829-4933 for the IRS Stakeholder Liaison Field office in your area. A Stakeholder Liaison can assist you with more information about the Tip Program. You may also obtain information by sending an e-mail to Tip.Program@irs.gov.

Who Should Apply

Currently, the IRS is offering participation in TRD/EP to employers in the food and beverage, hairstyling, and gaming (casino) industries. There are now new agreements to accommodate every tipping industry.

All employers with establishments where tipping is customary should review their operations. Then, if it is determined that there is or has been an underreporting of tips, the employer may apply for one of the two arrangements (depending on their specific business) under the TRD/EP -TRDA, TRAC or TRDA.

Note: Employers currently under a TRDA, and wishing to switch to a TRAC, must first terminate their TRDA.

When To Apply

An employer may apply for one of the two arrangements, depending on his/ her specific business, at any time. The effective date of the arrangement is determined by receipt and handling of the employer's application.

TRDA is effective as of the date the IRS Employment Tax Territory Manager signs the arrangement.

TRAC is generally effective as of the first day of the quarter following the date the Stakeholder Liaison Area Manager signs the agreement.

TRDA vs. TRAC (how they differ)

TRDA	TRAC
TRDA requires the IRS to work with the establishment to arrive at a tip rate for the establishment's various occupations.	TRAC does not require that a tip rate be established but it does require the employer to: ▪ establish a procedure where a directly-tipped employee is provided (no less than monthly) a written statement of charged tips attributed to the employee. ▪ implement a procedure for the employees to verify or correct any statement of attributed tips. ▪ adopt a method where an indirectly-tipped employee reports his or her tips (no less than monthly). This could include a statement prepared by the employer and verified or corrected by the employee. ▪ establish a procedure where a written statement is prepared and processed (no less than monthly) reflecting all cash tips attributable to sales of the directly-tipped employee.
TRDA requires the employee to enter into a Tipped Employee Participation Agreement (TEPA) with the employer.	TRAC does not require an agreement between the employee and employer.

TRDA	TRAC
TRDA requires the employer to get 75 % of the employees to sign TEPAs and report at or above the determined rate.	TRAC affects all (100%) employees.
TRDA provides that if employees fail to report at or above the determined rate, the employer will provide the names of those employees, their social security numbers, job classification, sales, hours worked, and amount of tips reported.	TRAC provides that if the employees of an establishment collectively underreport their tip income, tip examinations may occur but only for those employees that underreport.
TRDA has no specific education requirement.	TRAC includes a commitment by the employer to educate and reeducate quarterly all directly and indirectly-tipped employees and new hires of their statutory requirement to report all tips to their employer.
TRDA participation assures the employer that prior periods will not be examined as long as participants comply with the requirements under the agreement.	TRAC includes the same rule.

Example of a TRAC Statement

Use the following "example" to help you develop your statement for your specific business, and provide a copy to your employees. (The following example is designed specifically for employees in the food and beverage industry.) A TRAC statement is given to an employee showing tips attributed to him/her. This example not only fulfills the statement required for charged tips but also for cash tip reporting and for indirectly-tipped employee reporting.

"title"

Employer Portion

Employer Name:	Mark Doe
Employee Address:	123 Main Street
City, State, Zip:	Any Town, USA 12345
Employee SSN:	000-00-000
Job Category:	Food Serve
Establishment Name:	ABC Bar & Grill
Employer EIN:	00-0000000
Report Period:	01/01/00 - 01/31/00
Gross Sales:	$6000
Charged Sales w/Tips	$2,000
Charged Tips:	$280
Charged Tip Rate	14%
Sales Subject to Cast tips	$4000

Employer fills out top portion.

Gross Sales: only include food & drink amount. Do not include tax, tip, or non-food/drink items.

Charged Sales: include charged sales that show a tip on food & drink amounts only. Do not include tax, tip or non-food/drink items.
(A charged sale with no tip is included as a cash sale.)

Employee Portion

Cash Tips	$520
Cash Tip Rate	13%

Tips Shared w/Others

Name:	Job Category:	Amount:
Johnny Noname	Busser	$120
Total		(120)

Tips Recieved from Others

Name:	Job Category	Amount
Susie Cue	Cocktail	$100
Total		100

Net tips kept and reportable: $780

Employee Signature: *Mark Doe* Date: *3/23/15*

Employee fills out top portion. An indirectly-tipped employee would only receive (from the employer) the "title" portion of the statement filled out, unless employer captured "tips shared w/ others" information from the directly-tipped employee's TRAC Statement and showed it as "tips received from others".

Employee signs statement and gives a copy to employer, retaining a copy for his/her records. This statement would satisfy employer's requirement under the TRAC arrangement and the employee's requirement under the law.

Forms and Publications

The following is a list of IRS publications and forms relating to tip income reporting that can be downloaded from the IRS Web site at www.irs.ustreas.gov and can be ordered through the IRS by dialing 1-800-829-3676. (TTY/TDD equipment access, dial 1-800-829-4059).

Publication 505 – *Tax Withholding and Estimated Tax*

Publication 531 – *Reporting Tip Income*

Publication 1244 – *Employee's Daily Record of Tips and Report to Employer. This publication includes Form 4070, Employee's Report of Tips to Employer, and Form 4070A, Employee's Daily Record of Tips.*

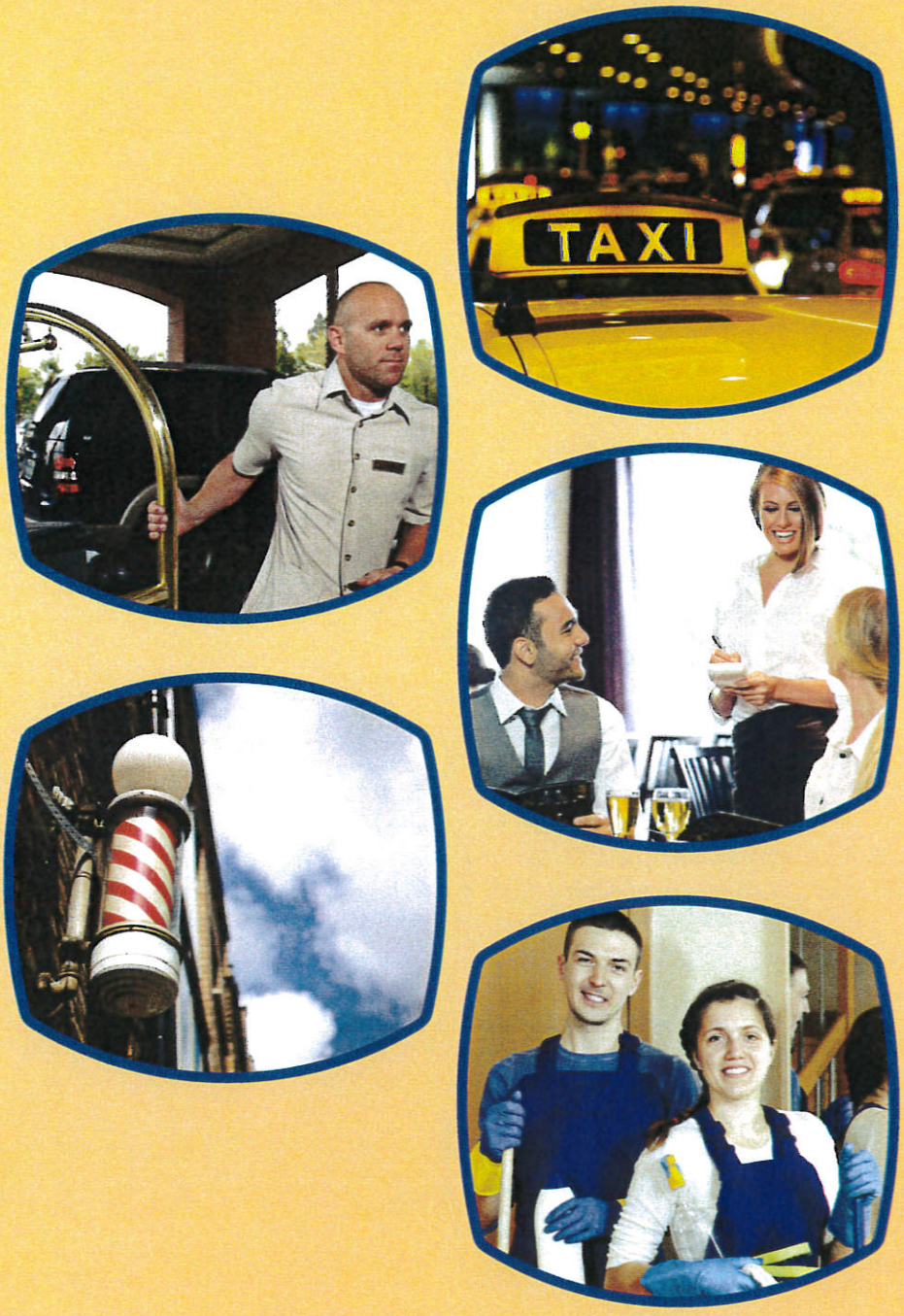
Form 941 – *Employer's Quarterly Federal Tax Return*

Form 1040ES – *Estimated Tax for Individuals*

Form 4137 – *Social Security and Medicare Tax on Unreported Tip Income*

Form 8027 – *Employer's Annual Information Return of Tip Income and Allocated Tips*

Form W-2 – *Wage and Tax Statement; and separate Instructions for Forms W-2 and W-3*



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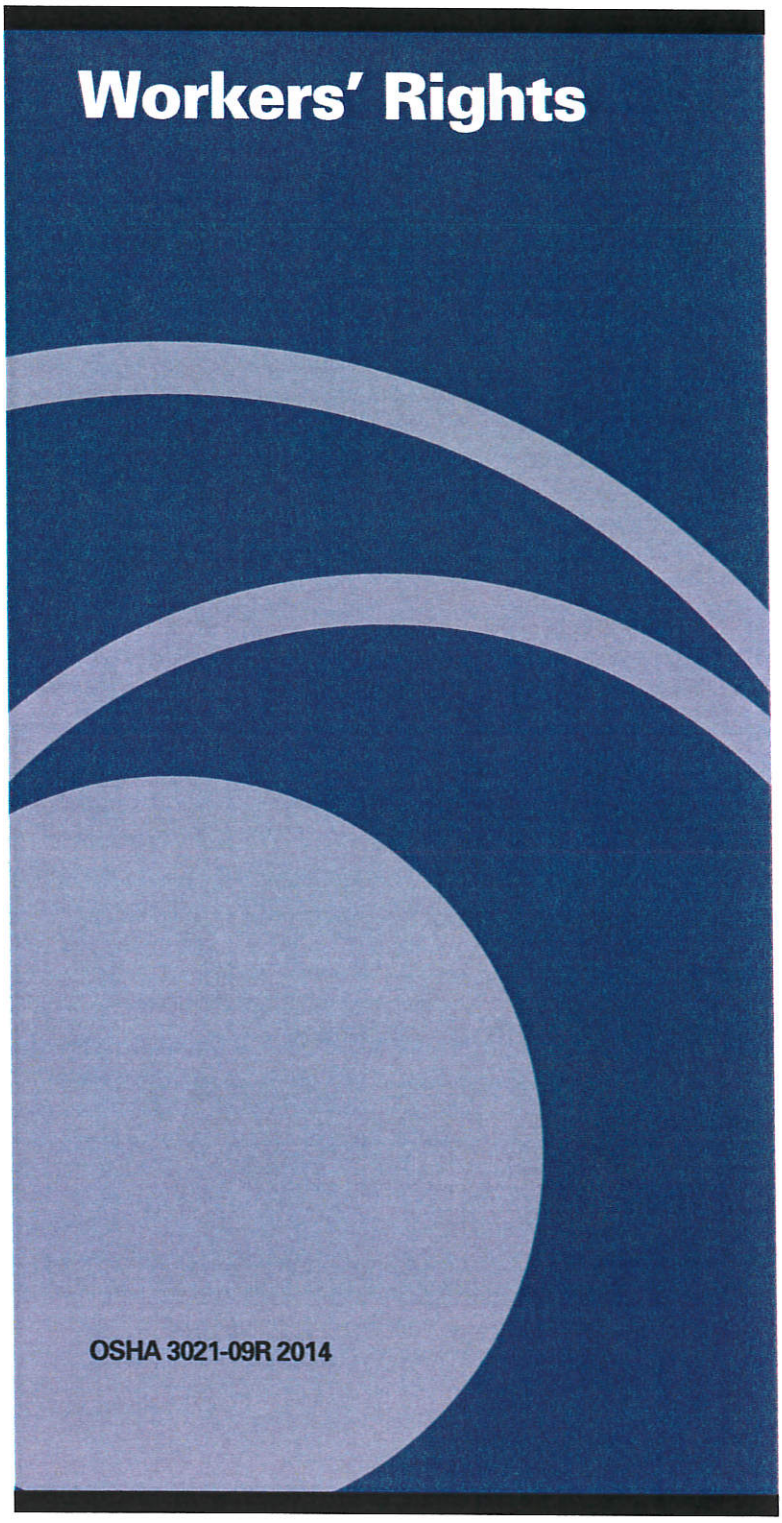
Department of the Treasury **Internal Revenue Service** www.irs.gov

OSHA® Occupational Safety and Health Administration

www.osha.gov

Workers' Rights



OSHA 3021-09R 2014

OSHA®
www.osha.gov

Occupational Safety and Health Act of 1970
"To assure safe and healthful working conditions for working men and women; by authorizing enforcement of the standards developed under the Act; by assisting and encouraging the States in their efforts to assure safe and healthful working conditions; by providing for research, information, education, and training in the field of occupational safety and health..."

This publication provides a general overview of worker rights under the *Occupational Safety and Health Act* (OSH Act). This publication does not alter or determine compliance responsibilities which are set forth in OSHA standards and the OSH Act. Moreover, because interpretations and enforcement policy may change over time, for additional guidance on OSHA compliance requirements the reader should consult current administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts.

This document, *Workers' Rights*, replaces *Employee Workplace Rights*.

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This information will be made available to sensory-impaired individuals upon request. Voice phone: (202) 693-1999; teletypewriter (TTY) number: 1-877-889-5627.

Workers' Rights

U.S. Department of Labor

Occupational Safety and Health Administration

OSHA 3021-09R 2014

U.S. Department of Labor

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Introduction

Worker Protection is the Law of the Land

You have the right to a safe workplace. The *Occupational Safety and Health Act of 1970* (OSH Act) was passed to prevent workers from being killed or otherwise harmed at work. The law requires employers to provide their employees with working conditions that are free of known dangers. The OSH Act created the Occupational Safety and Health Administration (OSHA), which sets and enforces protective workplace safety and health standards. OSHA also provides information, training and assistance to employers and workers.

Contact us if you have questions or want to file a complaint. We will keep your information confidential. **We are here to help you.**

Workers' Rights under the OSH Act

The OSH Act gives workers the right to safe and healthful working conditions. It is the duty of employers to provide workplaces that are free of known dangers that could harm their employees. This law also gives workers important rights to participate in activities to ensure their protection from job hazards. This booklet explains workers' rights to:

- File a confidential complaint with OSHA to have their workplace inspected.
- Receive information and training about hazards, methods to prevent harm, and the OSHA standards that apply to their workplace. The training must be done in a language and vocabulary workers can understand.
- Review records of work-related injuries and illnesses that occur in their workplace.
- Receive copies of the results from tests and monitoring done to find and measure hazards in the workplace.
- Get copies of their workplace medical records.
- Participate in an OSHA inspection and speak in private with the inspector.
- File a complaint with OSHA if they have been retaliated against by their employer as the result of requesting an inspection or using any of their other rights under the OSH Act.

- File a complaint if punished or retaliated against for acting as a "whistleblower" under the additional 21 federal statutes for which OSHA has jurisdiction.

A job must be safe or it cannot be called a good job. OSHA strives to make sure that every worker in the nation goes home unharmed at the end of the workday, the most important right of all.

Employer Responsibilities

Employers have the responsibility to provide a safe workplace. **Employers MUST provide their employees with a workplace that does not have serious hazards and must follow all OSHA safety and health standards.** Employers must find and correct safety and health problems. OSHA further requires that employers must try to eliminate or reduce hazards first by making feasible changes in working conditions – switching to safer chemicals, enclosing processes to trap harmful fumes, or using ventilation systems to clean the air are examples of effective ways to get rid of or minimize risks – rather than just relying on personal protective equipment such as masks, gloves, or earplugs.

Employers **MUST** also:

- Prominently display the official OSHA poster that describes rights and responsibilities under the OSH Act. **This poster is free and can be downloaded from www.osha.gov.**
- Inform workers about hazards through training, labels, alarms, color-coded systems, chemical information sheets and other methods.
- Train workers in a language and vocabulary they can understand.
- Keep accurate records of work-related injuries and illnesses.
- Perform tests in the workplace, such as air sampling, required by some OSHA standards.
- Provide hearing exams or other medical tests required by OSHA standards.
- Post OSHA citations and injury and illness data where workers can see them.
- As of January 1, 2015, notify OSHA within 8 hours of a workplace fatality or within 24 hours of any work-related inpatient hospitalization, amputation or loss of an eye.

- Not retaliate against workers for using their rights under the law, including their right to report a work-related injury or illness.

Who Does OSHA Cover

Private Sector Workers

Most employees in the nation come under OSHA's jurisdiction. OSHA covers most private sector employers and employees in all 50 states, the District of Columbia, and other U.S. jurisdictions either directly through Federal OSHA or through an OSHA-approved state plan. State-run health and safety plans must be at least as effective as the Federal OSHA program. To find the contact information for the OSHA Federal or State Program office nearest you, call 1-800-321-OSHA (6742) or go to www.osha.gov.

State and Local Government Workers

Employees who work for state and local governments are not covered by Federal OSHA, but have OSH Act protections if they work in those states that have an OSHA-approved state plan. The following 22 states or territories have OSHA-approved programs:

Alaska	Arizona	California
Hawaii	Indiana	Iowa
Kentucky	Maryland	Michigan
Minnesota	Nevada	New Mexico
North Carolina	Oregon	South Carolina
Tennessee	Utah	Vermont
Virginia	Washington	Wyoming
Puerto Rico		

Four additional states and one U.S. territory have OSHA-approved plans that cover public sector workers only:

Connecticut	Illinois	New Jersey
New York	Virgin Islands	

Private sector workers in these four states and the Virgin Islands are covered by Federal OSHA.

Federal Government Workers

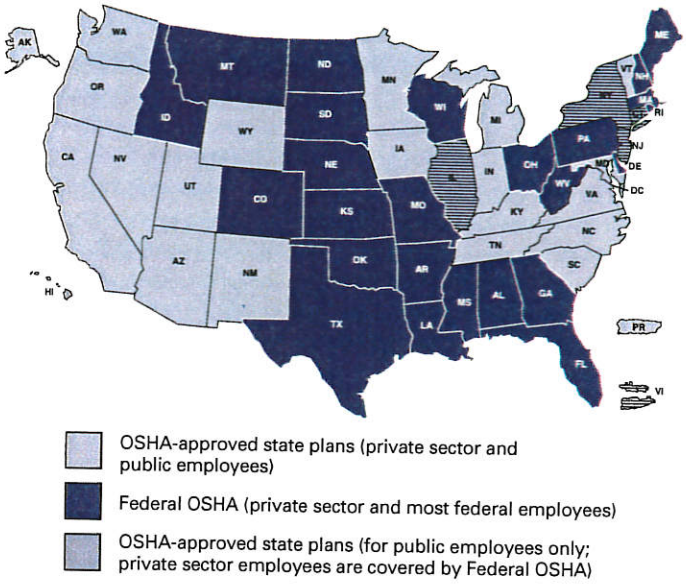
Federal agencies must have a safety and health program that meets the same standards as private employers. Although OSHA does not fine federal

agencies, it does monitor federal agencies and responds to workers' complaints. The United States Postal Service (USPS) is covered by OSHA.

Not Covered under the OSH Act

- Self-employed;
- Immediate family members of farm employers; and
- Workplace hazards regulated by another federal agency (for example, the Mine Safety and Health Administration, the Department of Energy, or Coast Guard).

OSHA-Approved State Plans



OSHA-approved state plans (private sector and public employees)

Federal OSHA (private sector and most federal employees)

OSHA-approved state plans (for public employees only; private sector employees are covered by Federal OSHA)

Worker Rights in State-Plan States

States that assume responsibility for their own occupational safety and health programs must have provisions at least as effective as Federal OSHA's, including the protection of worker rights.

Any interested person or group, including employees, with a complaint concerning the operation or administration of a state program may submit a complaint to the appropriate Federal OSHA regional administrator. (See contact list at the end of this booklet). This is called a Complaint About State Program Administration (CASPA). The

complaintant's name will be kept confidential. The OSHA regional administrator will investigate all such complaints, and where complaints are found to be valid, require appropriate corrective action on the part of the state.

Right to a Safe and Healthful Workplace

Employers' "General Duty"

Employers have the responsibility to provide a safe and healthful workplace that is free from serious recognized hazards. This is commonly known as the General Duty Clause of the OSH Act.

OSHA Standards: Protection on the Job

OSHA standards are rules that describe the methods that employers must use to protect their employees from hazards. There are four groups of OSHA standards: General Industry, Construction, Maritime, and Agriculture. (General Industry is the set that applies to the largest number of workers and worksites). These standards are designed to protect workers from a wide range of hazards.

These standards also limit the amount of hazardous chemicals, substances, or noise that workers can be exposed to; require the use of certain safe work practices and equipment; and require employers to monitor certain hazards and keep records of workplace injuries and illnesses.

Examples of OSHA standards include requirements to:

- Provide fall protection, such as a safety harness and lifeline;
- Prevent trenching cave-ins;
- Ensure the safety of workers who enter confined spaces such as manholes or grain bins;
- Prevent exposure to high levels of noise that can damage hearing;
- Put guards on machines;
- Prevent exposure to harmful levels of substances like asbestos and lead;
- Provide workers with respirators and other needed safety equipment (in almost all cases, free of charge);

- Provide healthcare workers with needles and sharp instruments that have built-in safety features to prevent skin punctures or cuts that could cause exposure to infectious diseases; and
- Train workers using a language and vocabulary they understand about hazards and how to protect themselves.

Employers must also comply with the General Duty Clause of the OSH Act. This clause requires employers to keep their workplaces free of serious recognized hazards and is generally cited when no specific OSHA standard applies to the hazard.

Right to be Provided Protective Equipment Free of Charge

In some situations it is not possible to completely eliminate a hazard or reduce exposures to a safe level, so respirators, goggles, earplugs, gloves, or other types of personal protective equipment are often used by themselves or in addition to other hazard control measures. Employers must provide most protective equipment free of charge. Employers are responsible for knowing when protective equipment is needed.

Right to Information

OSHA gives workers and their representatives the right to see information that employers collect on hazards in the workplace. Workers have the right to know what hazards are present in the workplace and how to protect themselves. Many OSHA standards require various methods that employers must use to inform their employees, such as warning signs, color-coding, signals, and training. Workers must receive their normal rate of pay to attend training that is required by OSHA standards and rules. The training must be in a language and vocabulary that workers can understand.

Right to Know about Chemical Hazards

The Hazard Communication standard, known as the "right-to-know" standard, requires employers to inform and train workers about hazardous chemicals and substances in the workplace. Employers must:

- Provide workers with effective information and training on hazardous chemicals in their work area.

This training must be in a language and vocabulary that workers can understand;

- Keep a current list of hazardous chemicals that are in the workplace;
- Make sure that hazardous chemical containers are properly labeled with the identity of the hazardous chemical and appropriate hazard warnings; and
- Have and make available to workers and their representatives Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) for each substance that provide detailed information about chemical hazards, their effects, how to prevent exposure, and emergency treatment if an exposure occurs.

Right to Know about Laws and Your Rights

Employers must display the official OSHA Poster, *Job Safety and Health: It's the Law*, in a place where workers will see it. It can be downloaded from the OSHA website, www.osha.gov. Pre-printed copies can also be obtained from OSHA.

Right to Get Copies of Workplace Injury and Illness Records

OSHA's Recordkeeping Rule requires employers in higher-hazard industries with more than ten employees to keep accurate and complete records of work-related injuries and illnesses. (Certain low-hazard workplaces such as offices are not required to keep such records). Employers must record any serious work-related injury or illness on the OSHA Form 300. A serious injury or illness is one that required medical treatment other than first aid, restricted work or days away from work. (Details of each incident are entered on a separate form, the OSHA Form 301). This OSHA Form 300 becomes an ongoing log of all recordable incidents. Each year from February 1 through April 30, employers must post a summary of the injury and illness log from the previous year (OSHA Form 300A) in a place where workers can see it. Workers and their representatives have the right to receive copies of the full OSHA Form 300 log. Following a request, employers must make copies available at the end of the next business day.

These injury and illness logs are important because they provide a comprehensive guide to possible hazards in the workplace that may need correcting. The logs should be used to focus on areas with high injury and illness rates, and to find and fix hazards in order to prevent future occurrences.

Right to Exposure Data

Many OSHA standards require employers to run tests of the workplace environment to find out if their workers are being exposed to harmful levels of hazardous substances such as lead or asbestos, or high levels of noise or radiation. These types of tests are called exposure monitoring. OSHA gives workers the right to get the results of these tests.

Right to Your Medical Records

Some OSHA standards require medical tests to find out if a worker's health has been affected because of exposures at work. For example, employers must test for hearing loss in workers exposed to excessive noise or for decreased lung function in workers exposed to asbestos. Workers have a right to their medical records. Workers' representatives also have a right to review these records but they must first get written permission from the worker to gain access to their medical information.

OSHA Worksite Investigations

OSHA conducts on-site inspections of worksites to enforce the OSHA law that protects workers and their rights. Inspections are initiated without advance notice, conducted using on-site or telephone and facsimile investigations, and performed by highly trained compliance officers. Worksite inspections are conducted based on the following priorities:

- Imminent danger;
- A fatality or hospitalizations;
- Worker complaints and referrals;
- Targeted inspections – particular hazards, high injury rates; and
- Follow-up inspections.

Inspections are conducted without employers knowing when or where they will occur. The employer

is not informed in advance that there will be an inspection, regardless of whether it is in response to a complaint or is a programmed inspection.

Right to File a Complaint with OSHA to Request an On-site OSHA Inspection

On-site inspections can be triggered by a worker complaint of a potential workplace hazard or violation. If your workplace has unsafe or unhealthful working conditions, you may want to file a complaint. Often the best and fastest way to get a hazard corrected is to notify your supervisor or employer.

Current workers or their representatives may file a written complaint and ask OSHA to inspect their workplace if they believe there is a serious hazard or that their employer is not following OSHA standards or rules. **Workers and their representatives have the right to ask for an inspection without OSHA telling their employer who filed the complaint.** It is a violation of the OSH Act for an employer to fire, demote, transfer or retaliate in any way against a worker for filing a complaint or using other OSHA rights.

A complaint can be filed in a number of ways:

1. **Mail or submit the OSHA Complaint Form** – Download the OSHA complaint form from our website (or request a copy from your local OSHA regional or area office), complete it and then fax or mail it back to your nearest OSHA regional or area office. Written complaints that report a serious hazard and are signed by a current worker or representative and submitted to the closest OSHA area office are given priority and are more likely to result in on-site OSHA inspections. A worker or their representative can request (on the form) that OSHA not let their employer know who filed the complaint. Please include your name, address and telephone number so we can contact you to follow up. This information is confidential.

2. **Online** – Go to the online Complaint Form on the OSHA website, at www.osha.gov/pls/osha7/eComplaintForm.html. Complaints that are sent in online will most likely be investigated using OSHA's phone/fax system whereby the employer is contacted by phone or fax (not an actual inspection) about the

hazard. **A written complaint that reports a serious hazard and is signed by a current worker(s) or their representative and mailed or otherwise submitted to an OSHA area or regional office is more likely to result in an on-site OSHA inspection.** Complaints received online from workers in OSHA-approved state plan states will be forwarded to the appropriate state plan for response.

3. **Telephone** – Call your local OSHA regional or area office at 1-800-321-OSHA (6742). OSHA staff can discuss your complaint and respond to any questions you have. **If there is an emergency or the hazard is immediately life-threatening, call your local OSHA regional or area office.**

Who else can file a complaint?

Employee representatives, for the purposes of filing a complaint, are defined as any of the following:

- An authorized representative of the employee bargaining unit, such as a certified or recognized labor organization.
- An attorney acting for an employee.
- Any other person acting in a bona fide representative capacity, including, but not limited to, members of the clergy, social workers, spouses and other family members, health care providers and government officials or nonprofit groups and organizations acting upon specific complaints or injuries from individuals who are employees. In general, the affected employee should have requested, or at least approved, the filing of the complaint on his or her behalf.

In addition, anyone who knows about a workplace safety or health hazard may report unsafe conditions to OSHA, and OSHA will investigate the concerns reported.

Rights of Workers during an Inspection

During an inspection, workers or their representatives have the following rights:

- Have a representative of employees, such as the safety steward of a labor organization, go along on the inspection;
- Talk privately with the inspector; and
- Take part in meetings with the inspector before and after the inspection.

When there is no authorized employee representative, the OSHA inspector must talk confidentially with a reasonable number of workers during the inspection.

Workers are encouraged to:

- Point out hazards;
- Describe injuries or illnesses that resulted from these hazards;
- Discuss past worker complaints about hazards; and
- Inform the inspector of working conditions that are not normal during the inspection.

Following the Inspection

At the end of the inspection, the OSHA inspector will meet with the employer and the employee representatives in a closing conference to discuss any violations found and possible methods by which any hazards found will be abated. If it is not practical to hold a joint conference, the compliance officer will hold separate conferences.

When the OSHA area director determines that there has been a violation of OSHA standards, regulations, or other requirements, the area director issues a citation and notification of proposed penalty to an employer. A citation includes a description of the violation and the date by when the corrective actions must be taken. Depending on the situation, OSHA can classify a violation as serious, willful, or repeat. The employer can also be cited for failing to correct a violation for which it has already been cited. Employers must post a copy of a citation in the workplace where employees will see it.

Workers' Rights following Issuance of Citations

Workers and employers can contest citations once they are issued to the employer. Workers may only contest the amount of time the employer is given to correct the hazard. Workers or their representatives must file a notice of contest with the OSHA area office within 15 days of the issuance of a citation.

Employers have the right to challenge whether there is a violation, how the violation is classified, the amount of any penalty, what the employer must do to correct the violation and how long

they have to fix it. Workers or their representatives may participate in this appeals process by electing "party status." This is done by filing a written notice with the Occupational Safety and Health Review Commission (OSHRC).

The OSHRC hears appeals of OSHA citations. They are an independent agency separate from the Department of Labor. For more information, write to:

U.S. Occupational Safety and Health
Review Commission
1120 20th Street NW, 9th Floor
Washington, DC 20036
Phone: 202-606-5400 Fax: 202-606-5050
www.oshrc.gov

Right to Information if No Inspection is Conducted or No Citation Issued

The OSHA area director evaluates complaints from employees or their representatives according to the procedures defined in the OSHA Field Operations Manual. If the area director decides not to inspect the workplace, he or she will send a letter to the complainant explaining the decision and the reasons for it.

OSHA will inform complainants that they have the right to request a review of the decision by the OSHA regional administrator. Similarly, in the event that OSHA decides not to issue a citation after an inspection, employees have a right to further clarification from the area director and an informal review by the regional administrator.

Right to Use Your Rights: *Protection against Retaliation* Whistleblower Protection

The OSH Act prohibits employers from retaliating against their employees for using their rights under the OSH Act. These rights include filing an OSHA complaint, participating in an inspection or talking to the inspector, seeking access to employer exposure and injury records, raising a safety or health issue with the employer, or any other workers' rights described above.

Protection from retaliation means that an employer cannot punish workers by taking "adverse action", such as:

- Firing or laying off;
- Blacklisting;
- Demoting;
- Denying overtime or promotion;
- Disciplining;
- Denying benefits;
- Failing to hire or rehire;
- Intimidation;
- Making threats;
- Reassignment affecting prospects for promotion; or
- Reducing pay or hours.

You can file a complaint alleging retaliation with OSHA if your employer has punished you for using any employee rights established under the OSH Act. **If you have been retaliated against for using your rights, you must file a complaint with OSHA within 30 calendar days from the date the retaliatory decision has been both made and communicated to you (the worker). Contact your local OSHA office by calling, within 30 days of the alleged retaliation, 1-800-321-OSHA (6742), or send a letter to your closest regional or area office. No form is required.** In states with approved state plans, employees may file a complaint with both the State and Federal OSHA.

Following a complaint, OSHA will contact the complainant and conduct an interview to determine whether an investigation is necessary.

If the evidence shows that the employee has been retaliated against for exercising safety and health rights, OSHA will ask the employer to restore that worker's job, earnings, and benefits. If the employer refuses, OSHA may take the employer to court. In such cases, a Department of Labor attorney will represent the employee to obtain this relief.

If There is a Dangerous Situation at Work

If you believe working conditions are unsafe or unhealthful, we recommend that you bring the conditions to your employer's attention, if possible.

You may file a complaint with OSHA concerning a hazardous working condition at any time. However, you should not leave the worksite merely because you have filed a complaint. If the condition clearly presents a risk of death or serious physical harm, there is not sufficient time for OSHA to inspect, and, where possible, you have brought the condition to the attention of your employer, you may have a legal right to refuse to work in a situation in which you would be exposed to the hazard.

If a worker, with no reasonable alternative, refuses in good faith to expose himself or herself to a dangerous condition, he or she would be protected from subsequent retaliation. The condition must be of such a nature that a reasonable person would conclude that there is a real danger of death or serious harm and that there is not enough time to contact OSHA and for OSHA to inspect. Where possible, the employee must have also sought from his employer, and been unable to obtain, a correction of the condition. For more information, go to www.osha.gov/workers.html.

Additional Whistleblower Protections

Since passage of the OSH Act in 1970, Congress has expanded OSHA's whistleblower protection authority to protect workers from retaliation under 22 federal laws. These laws protect employees who report violations of various workplace safety, airline, commercial motor carrier, consumer product, environmental, financial reform, healthcare reform, nuclear, pipeline, public transportation agency, railroad, maritime and securities laws. Complaints must be reported to OSHA within set timeframes following the retaliatory action, as prescribed by each law.

These laws, and the number of days employees have to file a complaint, are:

Worker, Environmental and Nuclear Safety Laws

- ***Asbestos Hazard Emergency Response Act (AHERA)*** (90 days). Provides retaliation protection for individuals who report violations of environmental laws relating to asbestos in public or private nonprofit elementary and secondary school systems.
- ***Clean Air Act (CAA)*** (30 days). Provides retaliation protection for employees who, among other things, report violations of this law, which provides for the development and enforcement of standards regarding air quality and air pollution.
- ***Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*** (30 days). Protects employees who report regulatory violations involving accidents, spills, and other emergency releases of pollutants into the environment. The law also protects employees who report violations related to the cleanup of uncontrolled or abandoned hazardous waste sites.
- ***Energy Reorganization Act (ERA)*** (180 days). Protects certain employees in the nuclear industry who report violations of the Atomic Energy Act (AEA). Protected employees include employees of operators, contractors and subcontractors of nuclear power plants licensed by the Nuclear Regulatory Commission, and employees of contractors working with the Department of Energy under a contract pursuant to the Atomic Energy Act.
- ***Federal Water Pollution Control Act (FWPCA) (also known as the Clean Water Act)*** (30 days). Provides retaliation protection for employees who, among other things, report violations of the law controlling water pollution.
- ***Occupational Safety and Health Act of 1970*** (30 days). Provides retaliation protection for employees who exercise a variety of rights guaranteed under this law, such as filing a safety and health complaint with OSHA and participating in an inspection.

- *Safe Drinking Water Act (SDWA)* (30 days). Provides retaliation protection for employees who, among other things, report violations of this law, which requires that all drinking water systems assure that their water is potable, as determined by the Environmental Protection Agency.
- *Solid Waste Disposal Act (SWDA) (also known as the Resource Conservation and Recovery Act)* (30 days). Provides retaliation protection for employees who, among other things, report violations of the law regulating the disposal of solid waste.
- *Toxic Substances Control Act (TSCA)* (30 days). Provides retaliation protection for employees who, among other things, report violations of regulations involving the manufacture, distribution, and use of certain toxic substances.

Transportation Industry Laws

- *Federal Railroad Safety Act (FRSA)* (180 days). Provides protection to employees of railroad carriers and contractors and subcontractors of those carriers who report an alleged violation of any federal law, rule, or regulation relating to railroad safety or security, or gross fraud, waste, or abuse of federal grants or other public funds intended to be used for railroad safety or security; report, in good faith, a hazardous safety or security condition; refuse to violate or assist in the violation of any federal law, rule, or regulation relating to railroad safety or security; refuse to work when confronted by a hazardous safety or security condition related to the performance of the employee's duties (under imminent danger circumstances); request prompt medical or first-aid treatment for employment-related injuries; are disciplined for requesting medical or first-aid treatment or for following an order or treatment plan of a treating physician.
- *International Safe Container Act (ISCA)* (60 days). Provides retaliation protection for employees who report violations of this law, which regulates shipping containers.

- ***Moving Ahead for Progress in the 21st Century Act (MAP-21)*** (180 days). Prohibits retaliation by motor vehicle manufacturers, part suppliers, and dealerships against employees for providing information to the employer or the U.S. Department of Transportation about motor vehicle defects, noncompliance, or violations of the notification or reporting requirements enforced by the National Highway Traffic Safety Administration or for engaging in related protected activities as set forth in the provision.
- ***National Transit Systems Security Act (NTSSA)*** (180 days). Provides protection to public transit employees who, among other things, report an alleged violation of any federal law, rule, or regulation relating to public transportation agency safety or security, or fraud, waste, or abuse of federal grants or other public funds intended to be used for public transportation safety or security; refuse to violate or assist in the violation of any federal law, rule, or regulation relating to public transportation safety or security; report a hazardous safety or security condition; refuse to work when confronted by a hazardous safety or security condition related to the performance of the employee's duties (under imminent danger circumstances).
- ***Pipeline Safety Improvement Act of 2002 (PSIA)*** (180 days). Provides retaliation protection for employees who report violations of the federal laws regarding pipeline safety and security or who refuse to violate such provisions.
- ***Seaman's Protection Act (SPA)*** (180 days). Seamen are protected, among other things, for reporting to the Coast Guard or other federal agency a reasonably believed violation of a maritime safety law or regulation prescribed under that law or regulation. The law also protects work refusals where the employee reasonably believes an assigned task would result in serious injury or impairment of health to the seaman, other seamen, or the public and when the seaman sought, and was unable to obtain correction of the unsafe conditions.

- *Surface Transportation Assistance Act (STAA)* (180 days). Provides retaliation protection for truck drivers and other employees relating to the safety of commercial motor vehicles. Coverage includes all buses for hire and freight trucks with a gross vehicle weight greater than 10,001 pounds.
- *Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR21)* (90 days). Provides retaliation protection for employees of air carriers, contractors, or subcontractors of air carriers who, among other things, raise safety concerns.

Fraud Prevention Laws

- *Affordable Care Act (ACA)* (180 days). Protects employees who report violations of any provision of Title I of the ACA, including but not limited to retaliation based on an individual's receipt of health insurance subsidies, the denial of coverage based on a preexisting condition, or an insurer's failure to rebate a portion of an excess premium.
- *Consumer Financial Protection Act of 2010 (CFPA), Section 1057 of the Dodd-Frank Wall Street Reform and Consumer Protection Act* (180 days). Protects employees who report perceived violations of any provision of the *Dodd-Frank Act*, which encompasses nearly every aspect of the financial services industry. The law also protects employees who report violations of any rule, order, standard or prohibition prescribed by the Bureau of Consumer Financial Protection.
- *Section 806 of the Sarbanes-Oxley Act of 2002 (SOX)* (180 days). Protects employees of certain companies who report alleged mail, wire, bank or securities fraud; violations of the Securities and Exchange Commission (SEC) rules and regulations; or violations of Federal laws related to fraud against shareholders. The law covers employees of publicly traded companies and companies required to file certain reports with the SEC.

Consumer Safety Laws

- *Consumer Product Safety Improvement Act (CPSIA)* (180 days). Protects employees who report to their employer, the federal government, or a state attorney general reasonably perceived violations of any statute or regulation within the jurisdiction of the Consumer Product Safety Commission (CPSC). CPSIA covers employees of consumer product manufacturers, importers, distributors, retailers, and private labelers.
- *FDA Food Safety Modernization Act (FSMA)* (180 days). Protects employees of food manufacturers, distributors, packers, and transporters for reporting a violation of the Food, Drug, and Cosmetic Act, or a regulation promulgated under this law. Employees are also protected from retaliation for refusing to participate in a practice that violates this law.

If you believe that you have been retaliated against, call 1-800-321-OSHA (6742) to be connected to the nearest OSHA office to report your complaint. For more information, visit OSHA's Whistleblower page at www.whistleblowers.gov.

OSHA Assistance, Services and Programs

OSHA has a great deal of information to assist employers in complying with their responsibilities under OSHA law. Several OSHA programs and services can help employers identify and correct job hazards, as well as improve their injury and illness prevention program.

Establishing an Injury and Illness Prevention Program

The key to a safe and healthful work environment is a comprehensive injury and illness prevention program.

Injury and illness prevention programs are systems that can substantially reduce the number and severity of workplace injuries and illnesses, while reducing costs to employers. Thousands of employers across

the United States already manage safety using injury and illness prevention programs, and OSHA believes that all employers can and should do the same. Thirty-four states have requirements or voluntary guidelines for workplace injury and illness prevention programs. Most successful injury and illness prevention programs are based on a common set of key elements. These include management leadership, worker participation, hazard identification, hazard prevention and control, education and training, and program evaluation and improvement. Visit OSHA's Injury and Illness Prevention Programs web page at www.osha.gov/dsg/topics/safetyhealth for more information.

Compliance Assistance Specialists

OSHA has compliance assistance specialists throughout the nation located in most OSHA offices. Compliance assistance specialists can provide information to employers and workers about OSHA standards, short educational programs on specific hazards or OSHA rights and responsibilities, and information on additional compliance assistance resources. For more details, visit www.osha.gov/dcsp/compliance_assistance/cas.html or call 1-800-321-OSHA (6742) to contact your local OSHA office.

Free On-site Safety and Health Consultation Services for Small Business

OSHA's On-site Consultation Program offers free and confidential advice to small and medium-sized businesses in all states across the country, with priority given to high-hazard worksites. Each year, responding to requests from small employers looking to create or improve their safety and health management programs, OSHA's On-site Consultation Program conducts over 29,000 visits to small business worksites covering over 1.5 million workers across the nation.

On-site consultation services are separate from enforcement and do not result in penalties or citations. Consultants from state agencies or universities work with employers to identify workplace hazards, provide advice on compliance with OSHA standards, and assist in establishing safety and health management programs.

For more information, to find the local On-site Consultation office in your state, or to request a brochure on consultation services, visit www.osha.gov/consultation, or call 1-800-321-OSHA (6742).

Under the consultation program, certain exemplary employers may request participation in OSHA's **Safety and Health Achievement Recognition Program (SHARP)**. Eligibility for participation includes, but is not limited to, receiving a full-service, comprehensive consultation visit, correcting all identified hazards and developing an effective safety and health management program. Worksites that receive SHARP recognition are exempt from programmed inspections during the period that the SHARP certification is valid.

Cooperative Programs

OSHA offers cooperative programs under which businesses, labor groups and other organizations can work cooperatively with OSHA. To find out more about any of the following programs, visit www.osha.gov/dcsp/compliance_assistance/index_programs.html.

Strategic Partnerships and Alliances

The OSHA Strategic Partnerships (OSP) provide the opportunity for OSHA to partner with employers, workers, professional or trade associations, labor organizations, and/or other interested stakeholders. OSHA Partnerships are formalized through unique agreements designed to encourage, assist, and recognize partner efforts to eliminate serious hazards and achieve model workplace safety and health practices. Through the Alliance Program, OSHA works with groups committed to worker safety and health to prevent workplace fatalities, injuries and illnesses by developing compliance assistance tools and resources to share with workers and employers, and educate workers and employers about their rights and responsibilities.

Voluntary Protection Programs (VPP)

The VPP recognize employers and workers in private industry and federal agencies who have implemented effective safety and health management programs and maintain injury and illness rates below the national average for their respective industries. In VPP, management, labor, and OSHA work cooperatively

and proactively to prevent fatalities, injuries, and illnesses through a system focused on: hazard prevention and control, worksite analysis, training, and management commitment and worker involvement.

Occupational Safety and Health Training

The OSHA Training Institute in Arlington Heights, Illinois, provides basic and advanced training and education in safety and health for federal and state compliance officers, state consultants, other federal agency personnel and private sector employers, workers, and their representatives. In addition, 27 OSHA Training Institute Education Centers at 42 locations throughout the United States deliver courses on OSHA standards and occupational safety and health issues to thousands of students a year.

For more information on training, contact the OSHA Directorate of Training and Education, 2020 Arlington Heights Road, Arlington Heights, IL 60005; call 1-847-297-4810; or visit www.osha.gov/otiec.

OSHA Educational Materials

OSHA has many types of educational materials in English, Spanish, Vietnamese and other languages available in print or online. These include:

- Brochures/booklets that cover a wide variety of job hazards and other topics;
- Fact Sheets, which contain basic background information on safety and health hazards;
- Guidance documents that provide detailed examinations of specific safety and health issues;
- Online Safety and Health Topics pages;
- Posters;
- Small, laminated QuickCards™ that provide brief safety and health information; and
- *QuickTakes*, OSHA's free, twice-monthly online newsletter with the latest news about OSHA initiatives and products to assist employers and workers in finding and preventing workplace hazards. To sign up for *QuickTakes* visit www.osha.gov/quicktakes.

To view materials available online or for a listing of free publications, visit www.osha.gov/publications. You can also call 1-800-321-OSHA (6742) to order publications.

OSHA's website also has a variety of eTools. These include utilities such as expert advisors, electronic compliance assistance, videos and other information for employers and workers. To learn more about OSHA's safety and health tools online, visit www.osha.gov.

NIOSH Health Hazard Evaluation Program

Getting Help with Health Hazards

The National Institute for Occupational Safety and Health (NIOSH) is a federal agency that conducts scientific and medical research on workers' safety and health. At no cost to employers or workers, NIOSH can help identify health hazards and recommend ways to reduce or eliminate those hazards in the workplace through its Health Hazard Evaluation (HHE) Program.

Workers, union representatives and employers can request a NIOSH HHE. An HHE is often requested when there is a higher than expected rate of a disease or injury in a group of workers. These situations may be the result of an unknown cause, a new hazard, or a mixture of sources. To request a NIOSH Health Hazard Evaluation go to www.cdc.gov/niosh/hhe/request.html. To find out more about the Health Hazard Evaluation Program:

- Call (513) 841-4382, or to talk to a staff member in Spanish, call (513) 841-4439; or
- Send an email to HHERequestHelp@cdc.gov.

How to Contact OSHA

For questions or to get information or advice, to report an emergency, report a fatality or catastrophe, order publications, sign up for OSHA's e-newsletter *QuickTakes*, or to file a confidential complaint, contact your nearest OSHA office, visit www.osha.gov or call OSHA at 1-800-321-OSHA (6742), TTY 1-877-889-5627.

For assistance, contact us.

We are OSHA. We can help.

It's confidential.

OSHA Regional Offices

Region I
Boston Regional Office
(CT*, ME, MA, NH, RI, VT*)
JFK Federal Building, Room E340
Boston, MA 02203
(617) 565-9860 (617) 565-9827 Fax

Region II
New York Regional Office
(NJ*, NY*, PR*, VI*)
201 Varick Street, Room 670
New York, NY 10014
(212) 337-2378 (212) 337-2371 Fax

Region III
Philadelphia Regional Office
(DE, DC, MD*, PA, VA*, WV)
The Curtis Center
170 S. Independence Mall West
Suite 740 West
Philadelphia, PA 19106-3309
(215) 861-4900 (215) 861-4904 Fax

Region IV
Atlanta Regional Office
(AL, FL, GA, KY*, MS, NC*, SC*, TN*)
61 Forsyth Street, SW, Room 6T50
Atlanta, GA 30303
(678) 237-0400 (678) 237-0447 Fax

Region V
Chicago Regional Office
(IL*, IN*, MI*, MN*, OH, WI)
230 South Dearborn Street
Room 3244
Chicago, IL 60604
(312) 353-2220 (312) 353-7774 Fax

Region VI
Dallas Regional Office
(AR, LA, NM*, OK, TX)
525 Griffin Street, Room 602
Dallas, TX 75202
(972) 850-4145 (972) 850-4149 Fax
(972) 850-4150 FSO Fax

Region VII
Kansas City Regional Office
(IA*, KS, MO, NE)
Two Pershing Square Building
2300 Main Street, Suite 1010
Kansas City, MO 64108-2416
(816) 283-8745 (816) 283-0547 Fax

Region VIII
Denver Regional Office
(CO, MT, ND, SD, UT*, WY*)
Cesar Chavez Memorial Building
1244 Speer Boulevard, Suite 551
Denver, CO 80204
(720) 264-6550 (720) 264-6585 Fax

Region IX
San Francisco Regional Office
(AZ*, CA*, HI*, NV*, and American Samoa,
Guam and the Northern Mariana Islands)
90 7th Street, Suite 18100
San Francisco, CA 94103
(415) 625-2547 (415) 625-2534 Fax

Region X
Seattle Regional Office
(AK*, ID, OR*, WA*)
300 Fifth Avenue, Suite 1280
Seattle, WA 98104
(206) 757-6700 (206) 757-6705 Fax

* These states and territories operate their own OSHA-approved job safety and health plans and cover state and local government employees as well as private sector employees. The Connecticut, Illinois, New Jersey, New York and Virgin Islands programs cover public employees only. (Private sector workers in these states are covered by Federal OSHA). States with approved programs must have standards that are identical to, or at least as effective as, the Federal OSHA standards.

Note: To get contact information for OSHA area offices, OSHA-approved state plans and OSHA consultation projects, please visit us online at www.osha.gov or call us at 1-800-321-OSHA (6742).

www.osha.gov

(800) 321-OSHA (6742)

If you think your job
is unsafe and you have
questions, call OSHA.
We can help.
It's confidential.

U.S. Department of Labor

For more information

OSHA® Occupational Safety and Health Administration

www.osha.gov (800) 321-OSHA (6742)

WAGE AND HOUR DIVISION
UNITED STATES DEPARTMENT OF LABOR

1-886-487-9243

www.dol.gov/whd

NAIL SALON WORKERS
WAGE AND HOUR RIGHTS

The Wage and Hour Division helps all workers in the United States, regardless of immigration status.

As a nail salon worker you have the right to be paid full and fair wages for all hours you work. Know your rights!

HOURS WORKED:

- You must be paid for all work performed whether or not the employer approves the work in advance.
- This includes time spent in training, traveling from site to site during the day, and any work performed "off the clock."

MINIMUM WAGE AND DEDUCTIONS:

- You must be paid at least the federal minimum wage of $7.25 per hour.
- Even if you are paid by the day or at a piece rate, your total wages must amount to at least the federal minimum wage for each hour worked.
- Your employer may make deductions for job-related expenses such as uniforms, equipment rentals, or tools but such deductions cannot reduce your pay below the federal minimum hourly wage.
- Some state laws require higher minimum wages and greater employee protections; employers must comply with those laws as well as the federal rules described here.

OVERTIME PAY:

- Generally, you must be paid 1-½ times your regular rate of pay after 40 hours of work in a seven-day workweek.

RECORDKEEPING:

- Employers are required to keep accurate records of all their employees' daily and weekly hours worked and wages paid.
- You should keep your own records of your work hours and wages, and your employer's name, address, and phone number.

It is illegal for your employer to fire you or retaliate against you in any way for contacting us or exercising your rights.

If you believe your rights have been violated or you have any questions, call us at **1-866-487-9243**.

We can assist you in ***your language***.

Our services are ***free*** and ***confidential***.

ARE YOU AN INDEPENDENT CONTRACTOR OR AN EMPLOYEE?

Some salons incorrectly call workers "independent contractors" when they are actually employees.

It is important for you to know the difference between the two because employees are legally entitled to greater health and safety protections, wages and benefits.

A salon owner may call you an independent contractor, or give you an IRS form 1099 instead of a W-2, but this does not automatically make you an independent contractor.

We look at several factors to determine whether you are truly an independent contractor.

Do you:

- *Rent a booth or station at a salon?*
- *Purchase your own supplies and tools?*
- *Set your own schedule and pay rates?*
- *Have your own customers who pay you directly?*
- *Have your own business license?*

If you answer "No," to some or all of these questions, you might be an employee.

Please contact us if you are not sure whether you are an employee or an independent contractor. We will look at your job duties and other factors to determine your workplace rights.

WH1018 0515

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
UNITED STATES DEPARTMENT OF LABOR

1-800-321-OSHA (6742)

www.osha.gov

Stay Healthy and Safe While Giving Manicures and Pedicures

Products used in nail salons can contain harmful chemicals. Over time, repeated use or exposure to high concentrations of these chemicals could damage your body or cause serious health effects. You have the right to working conditions that do not put you at risk of serious harm.

Hazardous Chemicals in Nail Salon Products

Some potentially hazardous chemicals and their health effects are below (for a more comprehensive list go to www.osha.gov/SLTC/nailsalons)

- Acetone (nail polish remover): headaches, dizziness, irritated eyes, skin and throat.
- Dibutyl phthalate (DBP) (nail polish): nausea, irritated eyes, skin, nose, mouth and throat.
- Ethyl methacrylate (EMA) (artificial nail liquid): asthma, irritated eyes, skin, nose and mouth; difficulty concentrating. Exposures while pregnant may affect your child. (Methyl methacrylate is banned in many states.)
- Formaldehyde (nail polish, nail hardener): can cause cancer; difficulty breathing; asthma like attacks; allergic reactions; irritated eyes, skin and throat.
- Toluene (nail polish, fingernail glue): dry or cracked skin; headaches, dizziness, and numbness; irritated eyes, nose, throat, and lungs; damage to liver and kidneys; and harm to unborn children during pregnancy.

Getting Information about Chemicals in Salon Products

- Professional nail salon products that contain hazardous chemicals must provide warning and precautionary statements;
- Salons must provide you with safety data sheets (SDSs) for the products that contain hazardous chemicals. SDSs list hazardous ingredients, how you can be exposed, health and safety risks, and steps for safe use and storage. You have the right to ask for and receive a copy of the SDS.

Protecting Worker Health

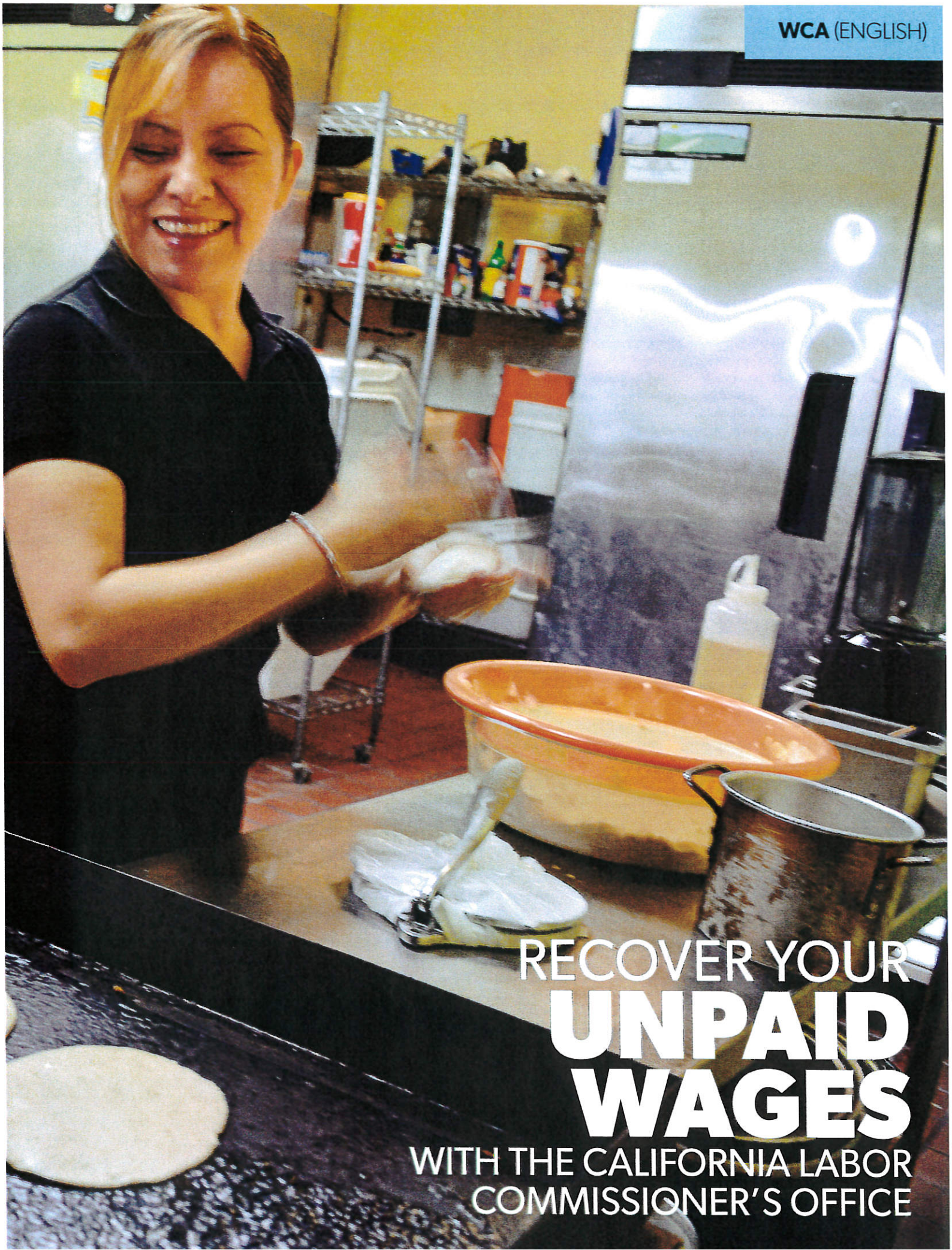
- Whenever possible, use less hazardous products. Some products claim to be made without the toxic trio (toluene, formaldehyde, and dibutyl phlalate).
- Ventilate salons and let in fresh air. Open doors and windows, always keep exhaust, heating and air conditions system, and ventilation tables on; and use portable ventilation machines.
- Keep products off skin and out of eyes. Wear gloves and goggles when transferring product; wear long sleeve shirts; wash hands frequently and keep food away from chemicals.
- Safely store chemicals.

THE RIGHT TO A SAFE WORKPLACE

Employees have the right to a safe workplace. Employers have the responsibility to provide working conditions that do not put workers at risk of serious harm. You have the right to receive training and information on job hazards and methods to prevent harm. Workers can call OSHA to ask questions, receive information or file a complaint requesting an OSHA inspection if they believe there is a serious hazard. It's illegal for employers to retaliate against you for raising safety concerns, or calling OSHA.

To ask questions or get more information, go to www.osha.gov or call 1-800-321-OSHA (6742). It's confidential. We are here to help.

Scan this code with your smartphone to view a comprehensive list of potentially hazardous chemicals and their health effects.



RECOVER YOUR UNPAID WAGES

WITH THE CALIFORNIA LABOR COMMISSIONER'S OFFICE

The Labor Commissioner's Office,

also called the Division of Labor Standards Enforcement (DLSE), is a part of the California Department of Industrial Relations. The Labor Commissioner's Office is the state agency that decides your claim for unpaid wages. It enforces minimum labor standards to ensure employees are not permitted to work under substandard, unlawful conditions. It also protects employers who comply with the law from having to compete with those who do not.

YOU DO NOT NEED A SOCIAL SECURITY NUMBER OR PHOTO IDENTIFICATION TO FILE A CLAIM.

YOU MAY FILE A CLAIM REGARDLESS OF YOUR IMMIGRATION STATUS.

YOU DO NOT NEED A LAWYER AND THE LABOR COMMISSIONER WILL PROVIDE AN INTERPRETER IN YOUR LANGUAGE.

THE LABOR COMMISSIONER'S OFFICE ENFORCES LABOR LAWS THROUGH THE FOLLOWING UNITS:

THE WAGE CLAIM ADJUDICATION UNIT reviews and decides individual claims for unpaid wages and other labor law violations.

THE GARMENT WAGE CLAIM ADJUDICATION UNIT reviews and decides claims filed by garment workers under the "Garment Worker Protection Act," a law known as "AB 633."

THE BUREAU OF FIELD ENFORCEMENT (BOFE) investigates reports of employers' failure to provide minimum wage, overtime or meal and rest periods to groups of workers. BOFE also investigates complaints against employers for violations of workers' compensation, child labor, recordkeeping, licensing, and registration laws.

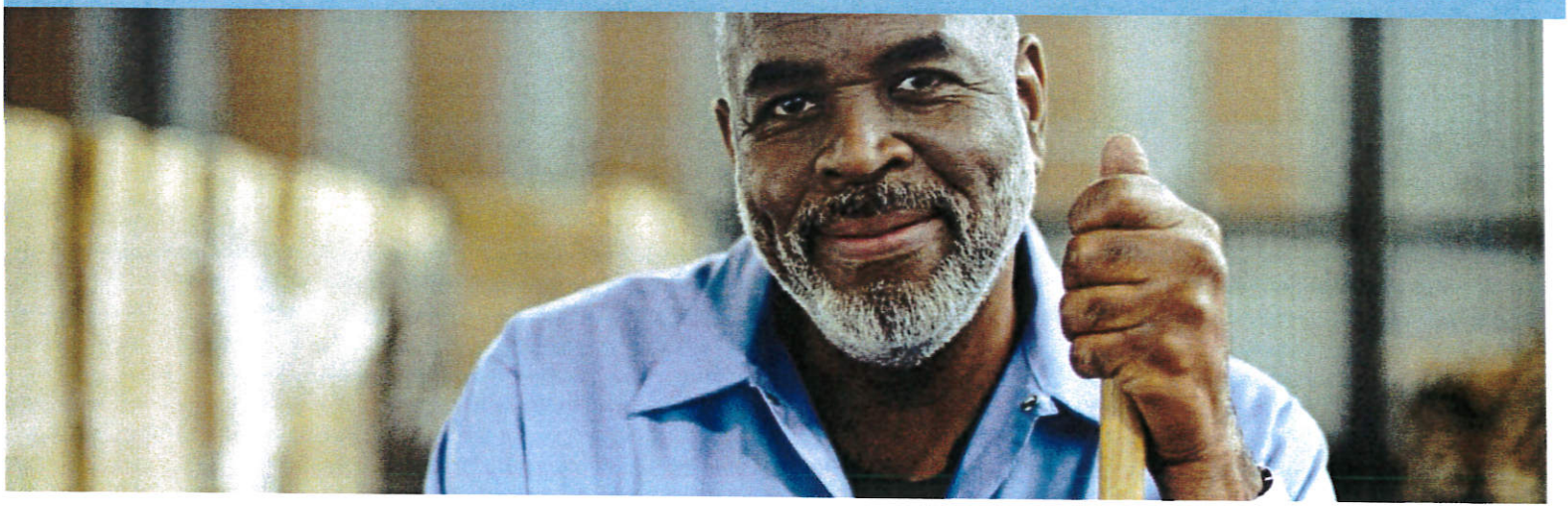
THE PUBLIC WORKS UNIT investigates violations of labor laws on public works construction projects. "Prevailing wages" are wages that are higher than the State minimum wage and are required for workers on most public construction projects.

THE RETALIATION COMPLAINT INVESTIGATION UNIT investigates complaints of retaliation. "Retaliation" occurs when an employer takes actions such as firing a worker or reducing hours or pay because the worker took steps to enforce his or her labor rights.

THE JUDGMENT ENFORCEMENT UNIT helps workers to collect their wages after the Labor Commissioner determines that an employer owes unpaid wages.

VIOLATIONS OF BASIC LABOR LAW PROTECTIONS SUCH AS NOT PAYING MINIMUM WAGE AND OVERTIME IS CALLED **WAGE THEFT**. IF YOU HAVE EXPERIENCED WAGE THEFT, FILE A WAGE CLAIM WITH THE LABOR COMMISSIONER.

HOW TO **RECOVER YOUR UNPAID WAGES**



1 **PREPARE** TO FILE

CHECK THE DEADLINE

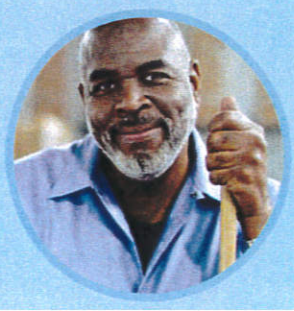
- You must file claims for violations of minimum wage, overtime, illegal deductions from pay or unpaid reimbursements within **three years**.
- You must file claims based on an oral promise to pay more than minimum wage within **two years**.
- You must file claims based on a written contract within **four years**.

RESEARCH

Gather any documents you have to prove your claim, such as paystubs, time sheets, calendars or notes about your work hours. If possible, identify any property your employer owns, such as buildings, equipment, and inventory, in case you win your case but your employer refuses to pay. This information may be used to collect your unpaid wages and the Deputy Labor Commissioner assigned to your claim will ask you to list this property.

IDENTIFY ALL YOUR EMPLOYERS

Many workers have one single employer, but some may have more than one employer. Be aware that any person or business that has control over wages, hours or working conditions may be included as a defendant in your claim and may be responsible for your wages.



"I worked as a janitor at a supermarket. The supermarket manager gave me my schedule and supervised me daily. However, my paychecks came from another cleaning company and my uniform had their name on it. I filed a claim because I was not paid for my overtime hours. The Labor Commissioner decided that both the supermarket and the cleaning company were responsible for my unpaid wages."

2 **FILE** A CLAIM

Complete and file the "Initial Report or Claim" with the Labor Commissioner district office that handles wage claims for the city where you worked. This form is available at any of the Labor Commissioner office locations and at the agency's website (www.dir.ca.gov/dlse). Claim forms are available in English, Spanish, Chinese, Korean, Vietnamese, Tagalog, Thai, and Russian. If you go to the Labor Commissioner to file your claim, there may be interpreters to help you in your language. However, it is still a good idea to bring someone who can interpret for you, if needed. Indicate your primary language on the claim form to receive interpretation assistance in the future.

Submit the form with copies of your supporting documents. Do not submit originals, as they may not be returned to you. After you file your Initial Report or Claim, you and your employer will be notified by mail about the next steps of your claim. Update the Deputy Labor Commissioner assigned to your claim in writing of any change in your address or phone number.

You must attend the settlement conference and hearing or your claim may be dismissed. If you are unable to attend the conference in person, you may be able to participate by phone by making prior arrangements with your assigned Deputy Labor Commissioner.

THE LABOR COMMISSIONER'S OFFICE IS HERE TO PROTECT YOUR RIGHTS, REGARDLESS OF YOUR IMMIGRATION STATUS. WE WILL NOT ASK ABOUT YOUR IMMIGRATION STATUS OR REPORT YOUR IMMIGRATION STATUS TO OTHER GOVERNMENT AGENCIES.

3 **ATTEND** A SETTLEMENT CONFERENCE

A settlement conference will be scheduled for most claims. During this conference, a Deputy Labor Commissioner will try to help you and your employer reach a settlement agreement for the payment of your claim. At any point during the conference you may ask to speak with the Deputy Labor Commissioner in private. If you do not reach a settlement agreement before or during the conference, then your claim will move to a hearing.

"I filed a claim because I was not paid minimum wage for my restaurant job. My boss made a settlement offer at the conference but I rejected it because it was much less than the amount of wages I was claiming. To prepare for the hearing, I made notes of all the important dates and activities for my claim to help me remember all the facts. I practiced testifying about the hours that I worked and how much I was paid. I also asked a co-worker to attend the hearing to testify about the hours that I worked. I knew my boss would argue that I was wrong, so I made a list of questions to ask her and her witnesses. The Hearing Officer was patient and fair, and later I received a decision that ordered my employer to pay me the unpaid wages."

4 **PROVE** YOUR CLAIM AT A HEARING

If your claim does not settle at the conference, a hearing will be scheduled and you will receive a Notice of Hearing with the hearing date and time. During the hearing, you and your employer will testify under oath and submit evidence about the claim. You are responsible for proving that your employer owes you wages. The Hearing Officer will not have any supporting documentation that you previously provided to the Labor Commissioner, so you must submit all of your evidence at the hearing.

TO **PREPARE** FOR THE HEARING:

- Review your claim information, such as the hours you worked and how much you were paid, and prepare notes and a timeline of events that you can review during the hearing.
- Bring at least three sets of copies to the hearing of any documents that support your claim so that you can refer to them and provide copies to the Hearing Officer and your employer.
- If you have witnesses who can testify to support your claim, make sure they can attend the hearing.
- You have the right to question the defendants and any of their witnesses. Prepare a list of possible questions in advance.

5 **REVIEW** THE DECISION AND **GET HELP** IF YOUR EMPLOYER APPEALS

After the hearing, you will receive a decision called an Order, Decision or Award ("ODA"). The ODA will explain the Labor Commissioner's decision and the amount that the employer must pay you, if any. An appeal must be filed within 10 days. If neither side appeals within that time, the decision will become final and enforceable as a court judgment. If your employer appeals, the Superior Court will hear the case without reviewing the decision of the Labor Commissioner. You and your employer will have to present your evidence and testimony again. You will receive a "Request for Attorney Representation" and a form called "Claimant's Financial Status." Low-income workers may use these forms to request free representation from one of the Labor Commissioner's attorneys. If you appeal the decision, you may represent yourself or hire an attorney.

SETTLEMENT:

When you enter a **SETTLEMENT AGREEMENT**, you agree to end your claim by accepting an employer's offer to pay you an amount that may be less than the full value of your claim. You may receive a settlement offer at any point in your claim process. Accepting or rejecting a settlement offer is an important decision. You can consider the following points before you make your decision.

- **WHY ACCEPT A SETTLEMENT OFFER?** Your claim resolves promptly and you may receive payment of your wages sooner. You eliminate the risk of losing at the hearing. If you do not settle and proceed with your claim, there is a possibility that your employer will file for bankruptcy or close before you receive any wages.
- **WHY REJECT A SETTLEMENT OFFER?** You may get far less than the wages and penalties to which you are entitled according to the law. If you receive a settlement offer that is too low, you can demand more and try to negotiate for an acceptable settlement amount.

KNOW YOUR RIGHTS:

Minimum Wage: Almost all employees in California must receive the minimum wage as required by State law, whether they are paid by piece rate, by commission, by the hour, or by salary.

Overtime: Most workers in California must receive overtime pay of:

- 1.5 times the regular rate of pay for all hours worked over 8 hours in a workday or over 40 hours in a week, and
- double the regular rate of pay for all hours worked over 12 hours in a workday.

If a worker works 7 days in a workweek, the worker must be paid:

- 1.5 times the regular rate of pay for the first 8 hours on the 7th day, and
- double the regular rate of pay for all hours worked over 8 hours on the 7th day.

However, overtime laws do not apply to all workers and certain workers, such as domestic workers and farm workers, are covered by different overtime laws.

Hourly Wages Promised: Your employer must pay you the wages promised. The Labor Commissioner enforces all wages an employer owes, not just minimum wage. For example, if your employer promised to pay you $15 per hour and only paid you $10 per hour, you may file a wage claim for the unpaid amount of $5 per hour.

Meal and Rest Breaks: Most workers in California must receive an uninterrupted 30-minute unpaid meal period for every 5 hours worked and a paid 10-minute rest period for every 4 hours worked. You may be entitled to a rest break even if you work less than 4 hours. Certain workers such as domestic workers and farm workers have different meal and rest break laws.

Deductions from Pay: Except for withholdings required by law (such as social security tax), your employer may not withhold or deduct wages from your pay. Common violations include deductions for uniforms or tools.

Reimbursement of Expenses: You must receive reimbursement for all expenses reasonably necessary for your job. For example, your employer must pay for tools and supplies required for the job and must provide mileage reimbursement if you use your personal car for work. However, if you earn at least twice the minimum wage, your employer can require you to provide certain hand tools customarily used in your occupation.

Reporting Time Pay: If you report to work expecting to work your usual schedule, but receive less than half of your usual hours, you must still be paid for at least half of your usual hours (for a minimum of at least 2 hours). For example, a farm worker who reports to work for an 8-hour shift and only works for 1 hour must receive 4 hours of pay—1 for the hour worked, and 3 as reporting time pay, so that the worker receives pay for at least half of the expected 8-hour shift.

Split Shift Premium: If you work 2 or more shifts in a workday with an unpaid break of more than an hour, your employer may be required to pay a "split shift premium" which is calculated based on your rate of pay.

Final Paychecks at Termination: If your employer fires you, you must receive your final paycheck on your last day. If you are not paid when your job ends, you may be entitled to receive an additional payment of a day's wages for each day your employer withholds your final paycheck, for up to 30 days.

Penalties for Bounced Checks: If your employer writes you a check that is returned for insufficient funds, you have a right to receive penalties of up to 30 days' wages in addition to the amount of the check.

FAQs

1. Who can file?

California labor laws protect all workers regardless of immigration status. The Labor Commissioner accepts complaints from any employee who performed work in California, and in some cases from public employees.

2. Where can I get help?

You may go to your local office of the Labor Commissioner to ask for help with your claim. Many non-profit organizations, including Legal Service Providers, help workers fill out and file claims with the Labor Commissioner.

3. When will I receive my unpaid wages?

It depends. Many claims settle and you receive your settlement either when you sign the settlement agreement or based on the agreed date of payment. If your case does not settle, the hearing and decision process may take several months. If you win and your employer does not pay, you have a number of collection methods available, such as requesting that the Sheriff seize your employer's assets (such as bank accounts, equipment, or inventory).

4. How does my claim affect other people in my workplace who experienced the same violations?

Your individual claim should not affect your co-workers. Co-workers who experienced the same wage violations will not recover their unpaid wages unless they file their own wage claims. You may also consider filing a Report of Labor Law Violation with the Labor Commissioner's Bureau of Field Enforcement (BOFE), the unit that investigates wage theft violations that affect groups of workers. Co-workers may recover wages as a result of a BOFE investigation.

5. What if my boss fires, demotes or punishes me for filing this claim?

California law prohibits employers from retaliating against workers for enforcing workplace rights. If your employer retaliates against you, you can file a complaint for retaliation with the Labor Commissioner's Retaliation Complaint Unit.

To learn more, visit the Frequently Asked Questions page at the DLSE website: http://www.dir.ca.gov/dlse/dlse-faqs.htm

LABOR COMMISSIONER'S OFFICE LOCATIONS

BAKERSFIELD
(661) 587-3060

EL CENTRO
(760) 353-0607

FRESNO
(559) 244-5340

LONG BEACH
(562) 590-5048

LOS ANGELES
(213) 620-6330

OAKLAND
(510) 622-3273

REDDING
(530) 225-2655

SACRAMENTO
(916) 263-1811

SALINAS
(831) 443-3041

SAN BERNARDINO
(909) 383-4334

SAN DIEGO
(619) 220-5451

SAN FRANCISCO
(415) 703-5300

SAN JOSE
(408) 277-1266

SANTA ANA
(714) 558-4910

SANTA BARBARA
(805) 568-1222

SANTA ROSA
(707) 576-2362

STOCKTON
(209) 948-7771

VAN NUYS
(818) 901-5315

REV. 09/2014

(Front cover)

California Board of Barbering and Cosmetology

Committed to educating consumers and licensees on Salon health and safety, workers' rights and infection control.

Workers' Rights Contact Information

Pocket Guide

(Inside)

Contact Information

Board of Equalization

The Board of Equalization administers California's sales taxes.
Website: http://www.boe.ca.gov/
General Tax Questions (Toll-free): 1-800-400-7115
Outside the US: 1-916-445-6362
California Relay Service (CRS): 711 (for hearing and speech disabilities)

Employment Development Department (EDD)

The Employment Development Department (EDD) is one of the largest state departments with employees at hundreds of service locations throughout the state and offers a wide variety of services to millions of Californians under the Job Service, Unemployment Insurance (UI), State Disability Insurance (SDI), Workforce Investment, and Labor Market Information programs. As California's largest tax collection agency, EDD also handles the audit and collection of payroll taxes and maintains employment records for more than 17 million California workers.

Website: http://www.edd.ca.gov/About_EDD/Contact_EDD.htm
Email: https://askedd.edd.ca.gov/
Office Directory: http://www.edd.ca.gov/About_EDD/Department_Directory.htm

Internal Revenue Service (IRS)

The Internal Revenue Service is the nation's tax collection agency and administers the Internal Revenue Code enacted by Congress. Many tax questions can be answered right on line at the IRS website: https://www.irs.gov/
If you require a face-to face meeting you may find the local office contact information at: https://www.irs.gov/uac/Contact-My-Local-Office-in-California

IRS Small Business and Self Employed Tax Center (SB/SE)

SB/SE serves taxpayers who file Form 1040, Schedules C, E, F or Form 2106, as well as small businesses with assets under $10 million.

Website: https://www.irs.gov/Businesses/Small-Businesses-&-Self-Employed/Small-Business-and-Self-Employed-Tax-Center-1

Labor Commissioner (also known as the Division of Labor Standards Enforcement (DLSE))

The Labor Commissioner provides information about employment rights, discrimination, and wrongful firings. Takes worker complaints about discrimination for health and safety activity and will investigate them. There are several locations throughout the state.

Website: http://www.dir.ca.gov/dlse/dlse.html
For Locations and Contact Information: http://www.dir.ca.gov/dlse/DistrictOffices.htm
Email: dlse2@dir.ca.gov

State of California Franchise Tax Board

Administers two of California's major tax programs: Personal Income Tax and Corporation Tax.

Website: https://www.ftb.ca.gov/
(800) 852-5711 Monday – Friday 7 a.m. – 5 p.m.
24/7 Automated Support
(800) 338-0505
Outside the U.S.
916.845.6500
TTY/TDD
(800) 822-6268

(Backside)

Is your salon safe?

Educating consumers and licensees on health and safety issues is a top priority for the California Board of Barbering and Cosmetology (BBC). Which is why, BBC is launching a public education campaign called CASafeSalon. We want the public and licensees to be educated about salon health and safety, workers' rights and infection control. Work together with us for a safe, healthy salon experience. #CASafeSalon

http://www.barbercosmo.ca.gov/consumers/safesalon.shtml

2420 Del Paso Road, Suite 100
Sacramento, CA 95834

No Attachment

BarberCosmo
Board of Barbering & Cosmetology

Board of Barbering and Cosmetology
PO Box 944226, Sacramento, CA 94244
P (800) 952-7574 F (916) 574-7574 | www.barbercosmo.ca.gov

MEMORANDUM

TO: Members
Board of Barbering and Cosmetology

Date: June 20, 2016

FROM: Tami Guess, Board Project Manager
Board of Barbering and Cosmetology

SUBJECT: Illegal Tools Flyer

On June 6, 2016, members of the Health and Safety Advisory Committee requested staff provide the members the currently distributed illegal tools flyer. The flyer was last updated July 2015. The flyer has been available on the Board's website since 2009. Staff is unaware of any tools that should be added to the flyer.

Members are advised that the Board does not endorse or approve any specific tools or product. The tools listed on the flyer do not meet the current requirements for use by any Board licensee or in any Board licensed establishments in the state of California. These tools are extremely common, which is what prompted the creation of the Illegal Tool flyer.

Staff was directed to bring to the members the current ways the flyer is being distributed.

- The flyer has been distributed at all trade shows attended by the Board, including: Nail Pro Show, Face and Body, ISSE.
- Made available to licensees by Board Inspectors during an inspection in which illegal tools have been found.
- Made available/given to licensees at all Disciplinary Review Hearings.
- Posted on BarberCosmo in English, Spanish, Korean and Vietnamese (Safe Sandal Season).
- Included with the citation, if the licensee has been cited for violation 993, in the preferred language, if it can be determined.
- Multiple Face Book and Twitter postings.
- Distributed by Board staff at Town Halls held by Senator Correa (2) and Senator Nguyen (1).
- Flyer has been distributed at Board Open House Events (March 15, 2009, June 10, 2013, June 2, 2014, September 8, 2014)

Additional educational opportunities the Board has used to educate licensees that they cannot use razor type devices in the removal of callus.

- Referenced in Stylist magazine articles (June 2014, July 2014, and October 2014).
- Safe Sandal Season campaigns: referenced in the Consumer Connection article (Summer 2009, 2012, 2013).
- Numerous TV/Radio interviews (English, Spanish and Vietnamese) with Executive Officer, Kristy Underwood.

Next Steps

Committee members may recommend revisions be made to the current flyer.

Members should advise staff if they have additional outreach opportunities that do not incur a budgetary hardship for the Board.

Members may review the attached article which will be distributed to the Board's Vietnamese speaking contacts. (VT contacts below)

1. San Jose area:

Dan Sinh Media Group (newspapers, weekly/monthly magazines)
Nam Pham
408-406-9324
phamphunam@yahoo.com
dansinhtelevision@yahoo.com

2. San Francisco-Oakland area

Mo San Francisco (weekly magazine)
Thien Huynh
415-673-8115
baomosf@yahoo.com

3. Southern California

NGUOI VIET (newspaper)
toasoan@nguoi-viet.com
Ngung Do (editor)
dsdzungnu@yahoo.com
Nguyen Huy (reporter)
nghuy9@yahoo.com
14771 Moran Street
Westminster, CA 92683
Tel 714-892-9414
Fax 714-894-1381

VIETBAO (daily newspaper)
phantanhai@vietbao.com
14841 Moran Street
Westminster, CA 92683
Tel 714-894-2500
Fax 714-766-6171

Vien Dong Daily News
Viendong@aol.com
Thanh_phongEE@yahoo.com (reporter)

Orange County Register
rkopetman@ocregister.com
Roxana Kopetman (Reporter)
Tel 714-796-7829
625 North Grand Avenue
Santa Ana, CA 92701

Viet Salon
Kimberly Pham (Associate Editor)
kim.pham@bobit.com
Anh Tran (Managing Editor)
Anh.tran@bobit.com
Tel 310-533-2485
3520 Challenger Street
Torrance, CA 90503

Chanh (William) Tran
Director of Nails Today Show
www.VBSTelevision.com

4. Sacramento Area

VietBeauty Magazine
Jim Huynh, Writer
vnnailtechs@yahoo.com
(916) 271-2402

Nail Safety in the Salon

You're busy. It's summer and sandal season is in full swing. People have been rushing to your salon for a soak and pedicure so that their feet will look their best. Now is not the time to take your eyes off the state's health and safety regulations. In fact, it's a perfect time for a refresher on what makes for a safe pedicure service. Following these rules will not only protect your clients form health risks; they will protect you as well from citations and fines from the California State Board of Barbering and Cosmetology.

Illegal Tools: No razor-edged tool or other device can be used to remove calluses. Callus removal is not within the manicurist's scope of practice and should not be performed by a licensee of the Board, but rather a qualified medical professional. Licensees, while skilled and trained in cutting, trimming, polishing, coloring, tinting, cleansing, or manicuring nails, may never use any product, device, machine or technique which results in the removal and destruction of a client's skin beyond the epidermis or have on the premises any razor-edged tool for the purpose of removing calluses.

Prohibited Instruments

Regulation 993(a) - No establishment or school shall have on the premises any razor-edged or other device or tool which is designed to remove calluses.

Examples of prohibited instruments that are illegal to have on the premises:

Establishment Owners: Illegal instruments found in an establishment can subject you to a $500 fine.

Individual Operators: Any operator present at the time of inspection that is found with an illegal instrument at their workstation or is found using an illegal instrument can also be subject to a $500 fine.

NOTE: Although the Board of Barbering and Cosmetology does not endorse or approve any specific tools or instruments, the tools and instruments shown above do not meet the current requirements for use by any Board licensees or in any Board licensed establishment in the state of California.

Disease and Infestation: Salons are prohibited from knowingly allowing a person afflicted with an infectious or communicable disease to service clients. At the same time, licensees are prohibited to service a person with an infectious or communicable disease. Board regulations also prohibit licensees from massaging any person's skin if it is inflamed or infected or an eruption is present.

Cleaning and Storage: Tools that can be disinfected, such as nail clippers and metal cuticle pushers, must be cleaned with soap or detergent and water and then completely immersed in an EPA-registered disinfectant. Containers need to be large enough so that all tools being disinfected can be thoroughly and completely immersed in the disinfectant. The disinfectant solution must remain covered at all times and be changed according to the manufacturer's instructions or when it is cloudy or contains debris. Tools that have been used on a client or soiled in any manner must be stored in a container clearly marked "dirty" or "soiled". Disinfected tools must be stored in a clean, covered place that is labeled "clean". All one time use items, such as cotton balls, Q-tips, toe separators, buffers, gloves, etc. should be stored in a clean, covered place and labeled "New".

Do a Visual Check of Your Salon: Look at the general cleanliness of the salon. Floors, walls, counters, and chairs must be clean and in good condition. Are towels scattered around the salon? Soiled towels must be stored in a closed container and not used until properly laundered and sanitized. Clean towels need to be stored in a closed, clean container or cabinet.

Next Time: Cleaning your Foot Spa and Proper Use of Liners.

Prohibited Tools

Regulation 993(a) - No establishment or school shall have on the premises or use any razor-edged tool for the purpose of removing calluses or other similar procedures.

Examples of prohibited tools that are illegal to have on the premises:

Establishment Owners: Illegal tools found in an establishment can subject you up to a $500.00 fine.

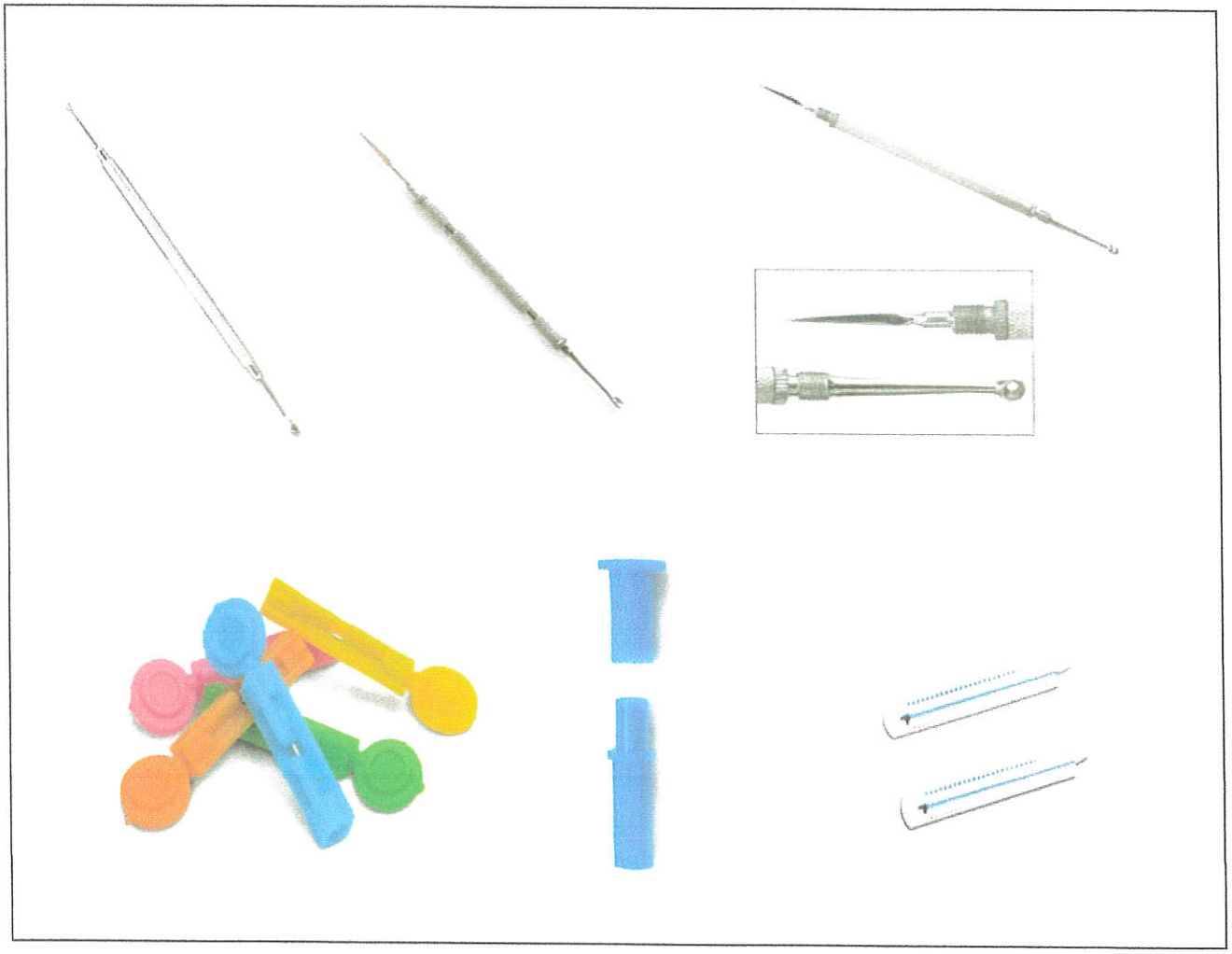
Individual Operators: Any operator present at the time of inspection that is found with an illegal tool at their workstation or is found using an illegal tool can also be subject up to a $500.00 fine.

NOTE: The Board of Barbering and Cosmetology does not endorse or approve any specific tools. The tools shown above do not meet the current requirements for use by any Board licensees or in any Board licensed establishment in the state of California.

Prohibited Tools

Regulation 993(b) - No establishment or school shall have on the premises any needle-like tool used for the purpose of extracting skin blemishes and other similar procedures.

Examples of prohibited tools that are illegal to have on the premises:



Establishment Owners: Illegal tools found in an establishment can subject you up to a $500.00 fine.

Individual Operators: Any operator present at the time of inspection that is found with an illegal tool at their workstation or is found using an illegal tool can also be subject up to a $500.00 fine.

NOTE: The Board of Barbering and Cosmetology does not endorse or approve any specific tools. The tools shown above do not meet the current requirements for use by any Board licensees or in any Board licensed establishment in the state of California.

No Attachment

BarberCosmo
Board of Barbering & Cosmetology

BUSINESS, CONSUMER SERVICES, AND HOUSING AGENCY • GOVERNOR EDMUND G. BROWN JR.

Board of Barbering and Cosmetology-Department of Consumer Affairs
PO Box 944226, Sacramento, CA 94244
P (800) 952-5210 F (916) 574-7574 | www.barbercosmo.ca.gov

MEMORANDUM

DATE	July 1, 2016
TO	Members, Health and Safety Advisory Meeting Board of Barbering and Cosmetology
FROM	Tami Guess, Board Project Manager Board of Barbering and Cosmetology
SUBJECT	**Proposed Meeting Date**

Staff is proposing the following date, time and location for the next meeting.

November 16, 2016
10 a.m.
Department of Consumer Affairs
1625 North Market Blvd.
Hearing Room S-102, 1st Floor
Sacramento, CA 95834

Please let Tami Guess know if you will be attending in person or will need to teleconference into the meeting. (916-575-7144 or Tandra.Guess@dca.ca.gov)

No Attachment