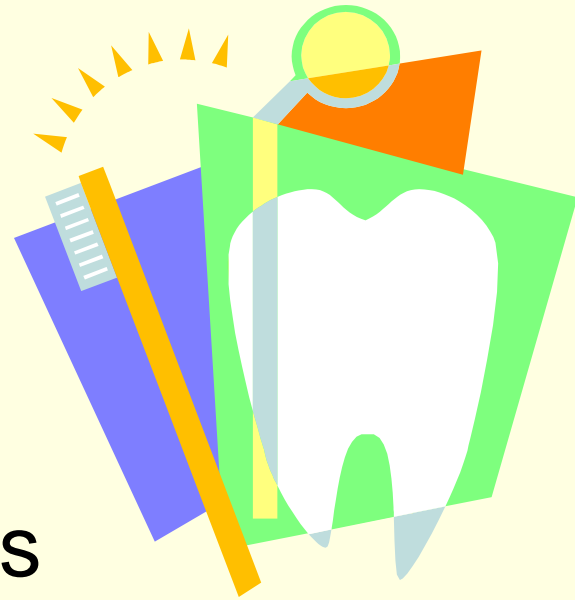


# Dental Office Chemicals

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- Dental Industry Overview
- Dental Office Injuries
- Chemicals Used
- Wastes Generated
- Waste Management Issues



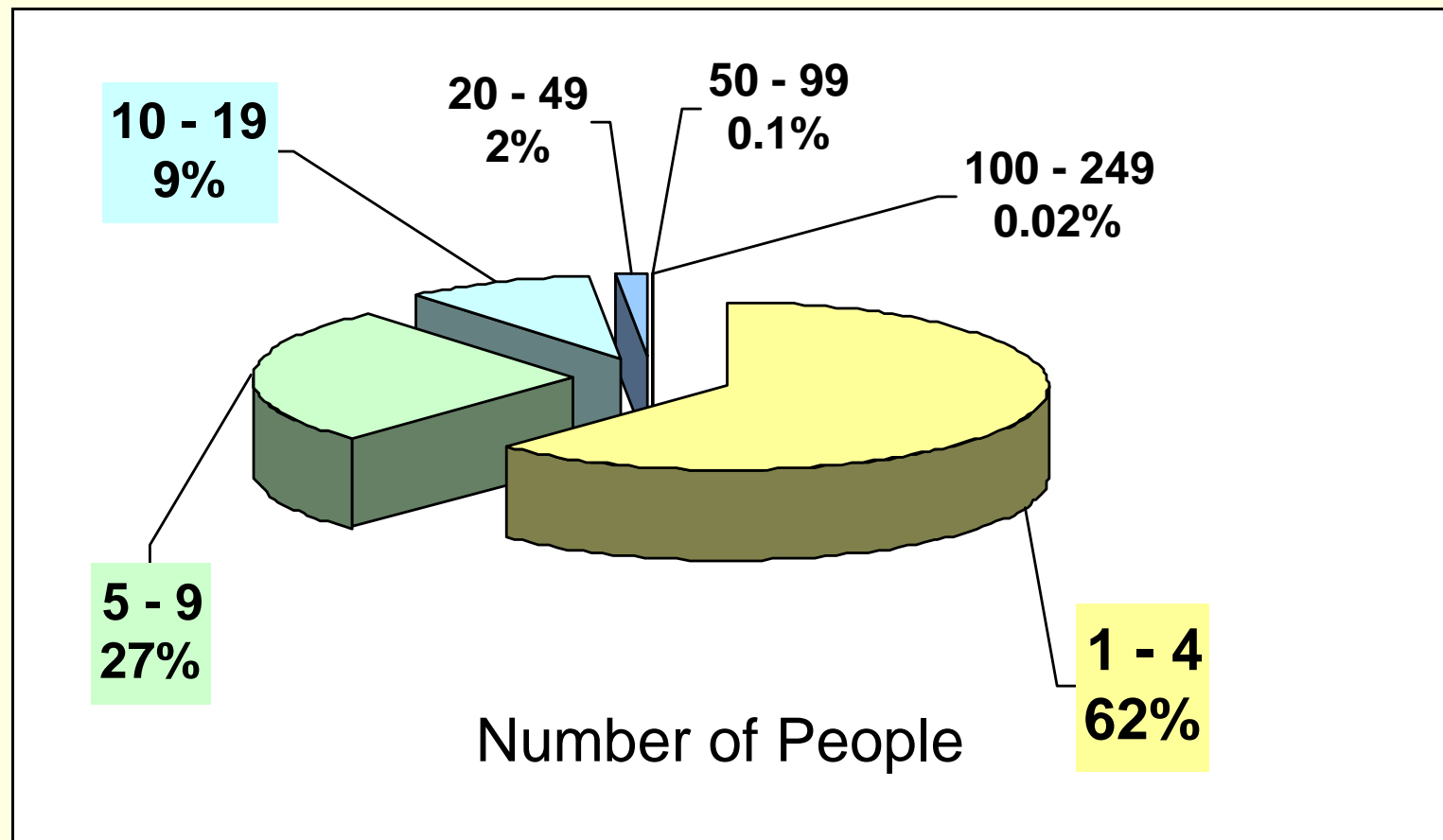
Tom Barron • Civil Engineer  
Sushma Dhulipala • SF Environment

# Dental Industry Overview

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- General Dentistry
- Pediatrics
- Endodontics
- Periodontics
- Prosthodontics

# Dental Office Sizes



Source: US Census - California (Late 1990s)

# Dental Office Layout

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- Front Office
- Operatories
- Back Office
  - Lab Areas
  - Break Room
  - Storage
  - Utility Closet



# Lab / Work Areas

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- Chemical Storage
- Ultrasonic Cleaner
- Sterilizer
- X-Ray Processor
- Medical Wastes
- Amalgam & Other Chemical Wastes

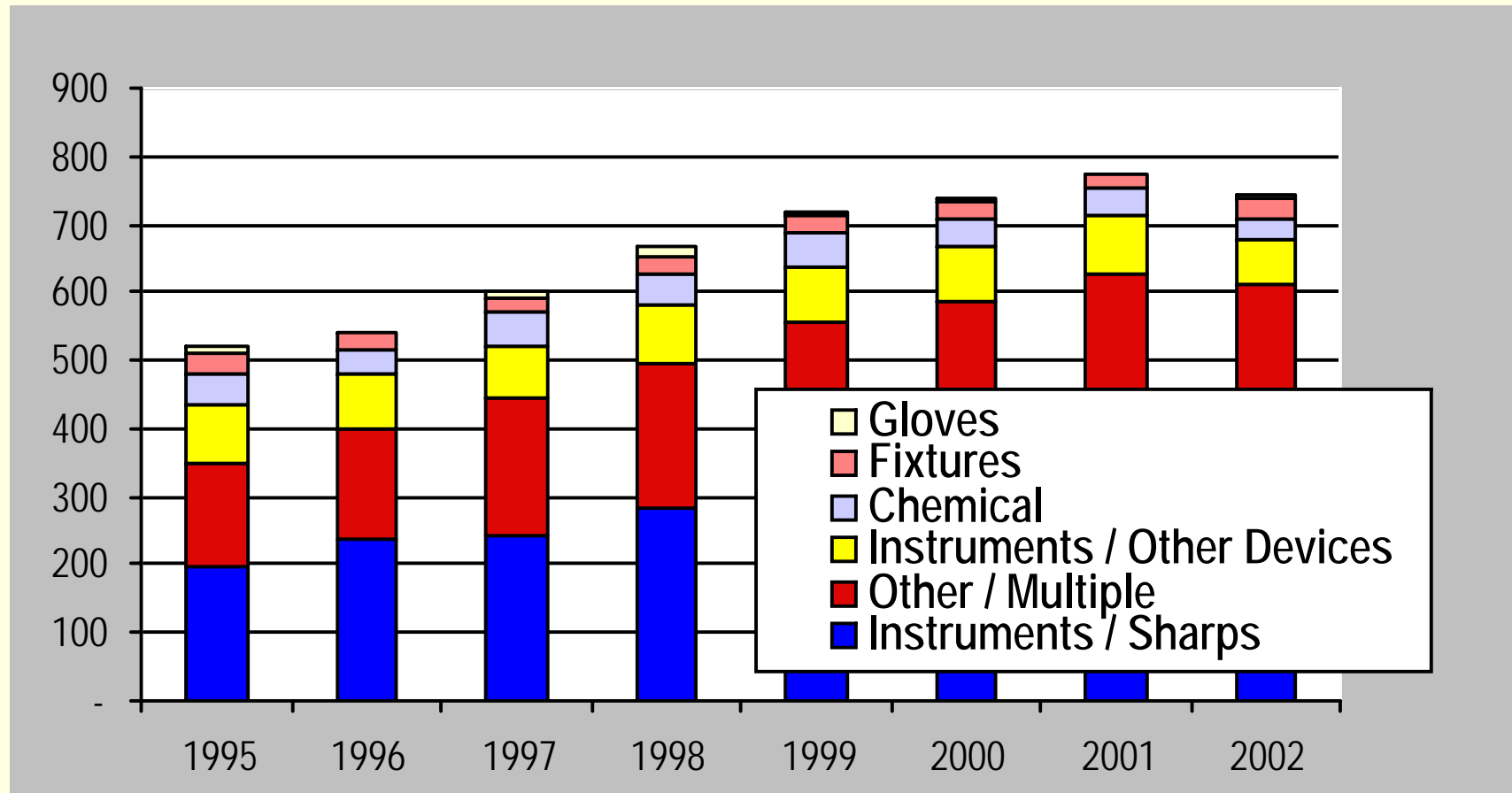


# Utility Closet

- Air Compressor
- Hot Water
- Vacuum System

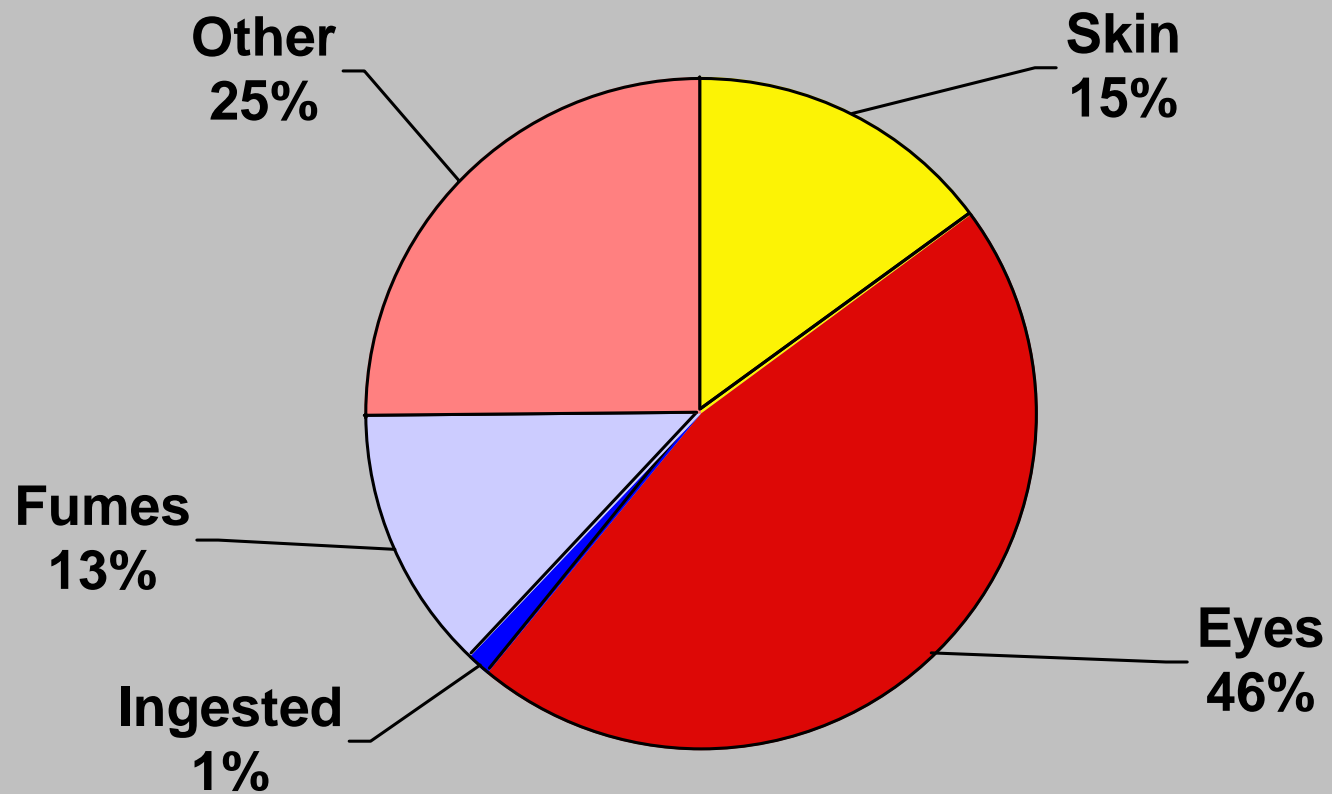


# Dental Office Injuries



Source: State of Washington

# Chemical Injuries



Source: State of Washington



# Health & Safety Information

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- Material Safety Data Sheet (MSDS)
- Product Labels & Use Instructions
- Professional Literature (CDA, ADA, etc.)
- Vendor Training Materials
- Loss Prevention Specialists

# Chemicals Dentists Use • 1

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- **Photography**

- Infection Control
- Hygiene Work
- Restoration Work
- Lab Work
- Pharmaceuticals
- Cleaning & Maint.

- Hydroquinone
- Silver
- Glutaraldehyde
- Potassium Hydroxide
- Potassium Sulfite
- Sodium Thiosulfate
- Acetic Acid

# Chemicals Dentists Use • 2

- Photography
- **Infection Control**
- Hygiene Work
- Restoration Work
- Lab Work
- Pharmaceuticals
- Cleaning & Maint.

- **Sanitizers**
  - Ethyl Alcohol
  - Triclosan
- **Disinfectants**
  - Alcohols (Ethyl, Isopropyl)
  - Quat. Ammonium Chloride
  - Oxidizers (Bleach,  $H_2O_2$ )
  - Phenylphenol
- **Sterilizers**
  - Glutaraldehyde
  - Orthophthaldehyde (OPA)
  - Formaldehyde

# Chemicals Dentists Use • 3

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- Photography
- Infection Control
- **Hygiene Work**
- **Restoration Work**
- **Lab Work**
- **Pharmaceuticals**
- Cleaning & Maint.

- Amalgam (Hg, Ag, Cu)
- Glass Ionomer
- Resin Composite
- Gold
- Porcelain
- Tooth Whitener
- Adhesives
- Disinfectants
- Antibiotics

# Chemicals Dentists Use • 4

- Photography
- Infection Control
- Hygiene Work
- Restoration Work
- Lab Work
- Pharmaceuticals
- **Cleaning & Maint.**

## Typical Cleaners With:

- Detergents
- Surfactants
- pH Adjusters
- Builders
- Disinfectants

## Concerns About :

- Endocrine Modifiers
- Low & High pH
- Bleach

# These Chemicals Generate Wastes ...

## **Hazardous Wastes**

- Photo processing wastes
- Chemical sterilants
- Line cleaners

## **Universal Wastes**

- Amalgam wastes
- Hg lamps
- Computers etc.

## **Medical Wastes**

- Sharps
- Biohazardous
- Pharmaceuticals



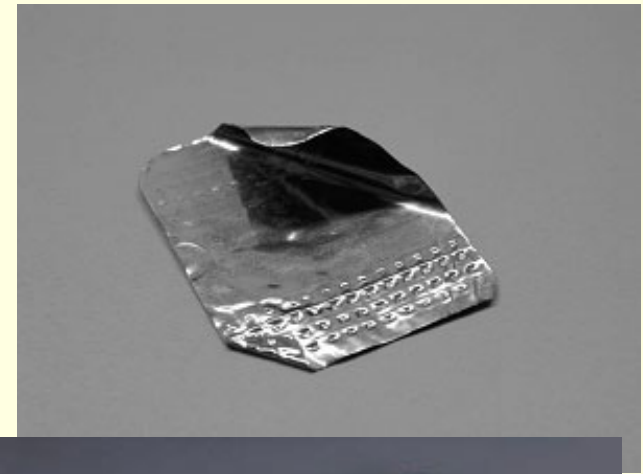
# Photo Processing Wastes - 1

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## Lead Foils & Lead Aprons

*Hazardous? Yes!* Contain lead

*Disposal:* Should be recycled



# Photo Processing Wastes - 2

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## X-Ray Developer

*Hazardous?* May contain hydroquinone & glutaraldehyde

*Disposal:* Used developer can go down the drain. But unused developer is a hazardous waste.

*Less-toxic tip:* Switch to digital

Fixer and Developer must NOT be mixed !!



# Photo Processing Wastes - 3

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## Used X-Ray Fixer

*Hazardous? Yes!* Contains Silver

*Disposal:* Recycle to reclaim silver

*Less-toxic tip:* Switch to digital



Fixer and Developer must NOT be mixed!!

# Photo Processing Wastes - 4

## X-Ray Cleaner



*Hazardous?* May contain Chromium

*Disposal:* Treat as hazardous waste

*Less-toxic tip:* Switch to digital

# Photo Processing Wastes - 5



## X-Ray Film

*Hazardous? Yes!* Contains Silver

*Disposal:* Recycle to reclaim silver

*Less-toxic tip:* Switch to digital



# Cleaning & Sterilization Wastes

*Hazardous?* Yes! Contains glutaraldehyde

*Disposal:* Treat on-site & discharge to sewer

*Less-toxic tip:* Autoclave or Dry heat oven



Ultrasonic Cleaners - ??



Chemiclave ~ Chemical based

Autoclave ~ Steam based

# Disinfectants

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*Hazardous?:* Contain a variety of toxics (see MSDS)

*Disposal:* Treat as hazardous waste

*Less-toxic tip:* Fully use up product, removing need for disposal.



Bleach must NOT be used to clean vacuum lines!!

# Amalgam Wastes

- Scrap amalgam
  - “Empty” capsules
  - Extracted teeth
  - Chairside traps
  - Vacuum screen
- 
- Gloves & gauze?
  - Air filters?
  - Instrument cleaning?
  - Carpets?





# Amalgam Separators



# Universal Wastes

*Commonly found hazardous wastes that are generally less toxic and therefore, less regulated. E.g. -*

- Fluorescent Lamps



- Batteries



- Aerosol Cans



- Mercury Thermometers



- Computers





# Medical Wastes

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**Sharps**



**Biohazardous**



**Pharmaceutical**



BIOHAZARD

Recycle extracted teeth with amalgam. Do NOT place in the Biohazard (RED) bin.

# Surviving Inspections

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## Strategies

- Schedule Appointment
- Confirm Day Before
- Ask for Checklist
- Focus on Key Points

# Acknowledgements

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**This presentation is the product of a team effort involving a number of organizations and individuals.**

**Today's presenters wish to acknowledge the important technical contributions this team made, as well as the persistence with which individual members expressed their views.**

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Dr. Jim Stevens, DDS  
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***THE END***



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