

Update from the California Department of Public Health's Occupational Health Branch

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California Industrial Hygiene Council
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Overview

- Intro to the Occupational Health Branch
- Investigation:
Isoflurane exposure in veterinary hospitals
- Emerging issue:
E-cigarette emissions in vape shops
- Education & outreach:
Some 2016 highlights
- How you can stay in touch & use our resources

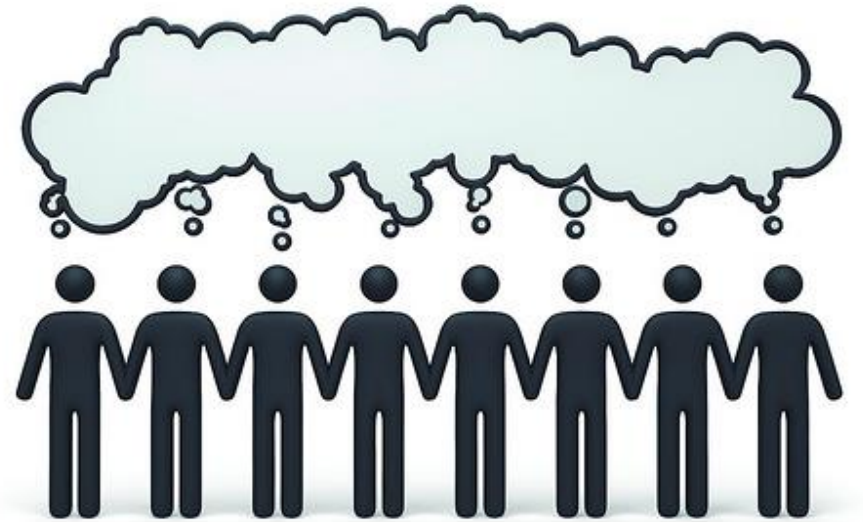


Promoting safe and health workplaces across California



OHB values

- Utilize & contribute to the science
- Collaborate across disciplines
- Mentor future occupational health workforce
- Partner with others



Meet OHB's industrial hygienists

Justine Weinberg



Jennifer McNary



New OLPPP Chief!
Nina Townsend



Michael Cooper



Marley Zalay



Promoting safe & healthy workplaces



Investigation: Isoflurane exposure in veterinary hospitals



Site visit for neurological exposures

- Investigated exposures to
 - Mercury
 - Cytotoxic drugs
 - Pesticides
 - Anesthetic gas – isoflurane



Machine that administers anesthetic gas

Prior isoflurane monitoring results

- Range: None detected up to 6.5 ppm (8-hr TWA)
- Recent: 3.5 ppm (8-hr TWA)
- Cal/OSHA PEL: 2 ppm (8-hr TWA)
- NIOSH REL: 2 ppm (1-hr ceiling)
– halogenated agents

(ACGIH: 50 ppm 8-hr TWA for halogenated agents; no TLV for isoflurane)



Health impacts of isoflurane

- Animal studies
 - Nerve cell death in brains
 - Learning and memory impairment
 - Reproductive effects: reduced fetal growth, brain/nerve damage in offspring of exposed animals
- Only two occupational studies, also include N₂O
 - Effects on balance and breathing control
 - No studies on chronic occupational exposure to low levels of isoflurane alone

Is waste anesthetic gas
overexposure a significant issue in
veterinary hospitals?

Stakeholder interviews

- California Veterinary Medical Board
- California Registered Veterinary Technicians Association
- California Veterinary Medicine Association
- Equipment servicer
- Vets we know

Issues identified

- Lack of awareness of monitoring requirement and PEL
- Lack of preventive maintenance on anesthesia machines
- Lack of daily leak testing

Cal/OSHA Consultation experience

- 7 visits to veterinary hospitals, 8/2008 – 7/2011
- Results
 - 6/7 facilities not monitoring
 - 5/7 lacked reproductive hazards policy
 - 5/7 lacked ventilation audits

How to motivate change?

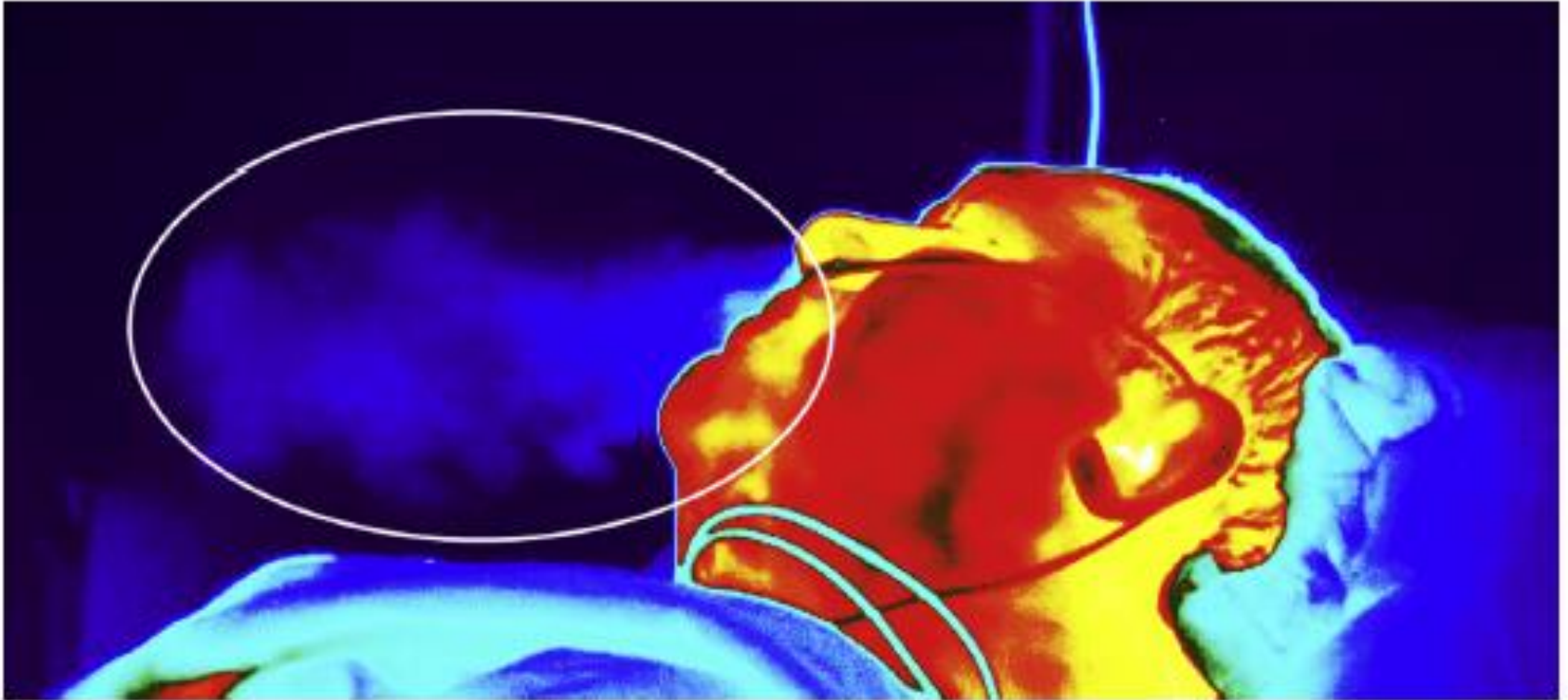


How to motivate change?

Use visual impact to promote “best practices”



Patient can emit anesthetic gas



Real-time exposure monitoring

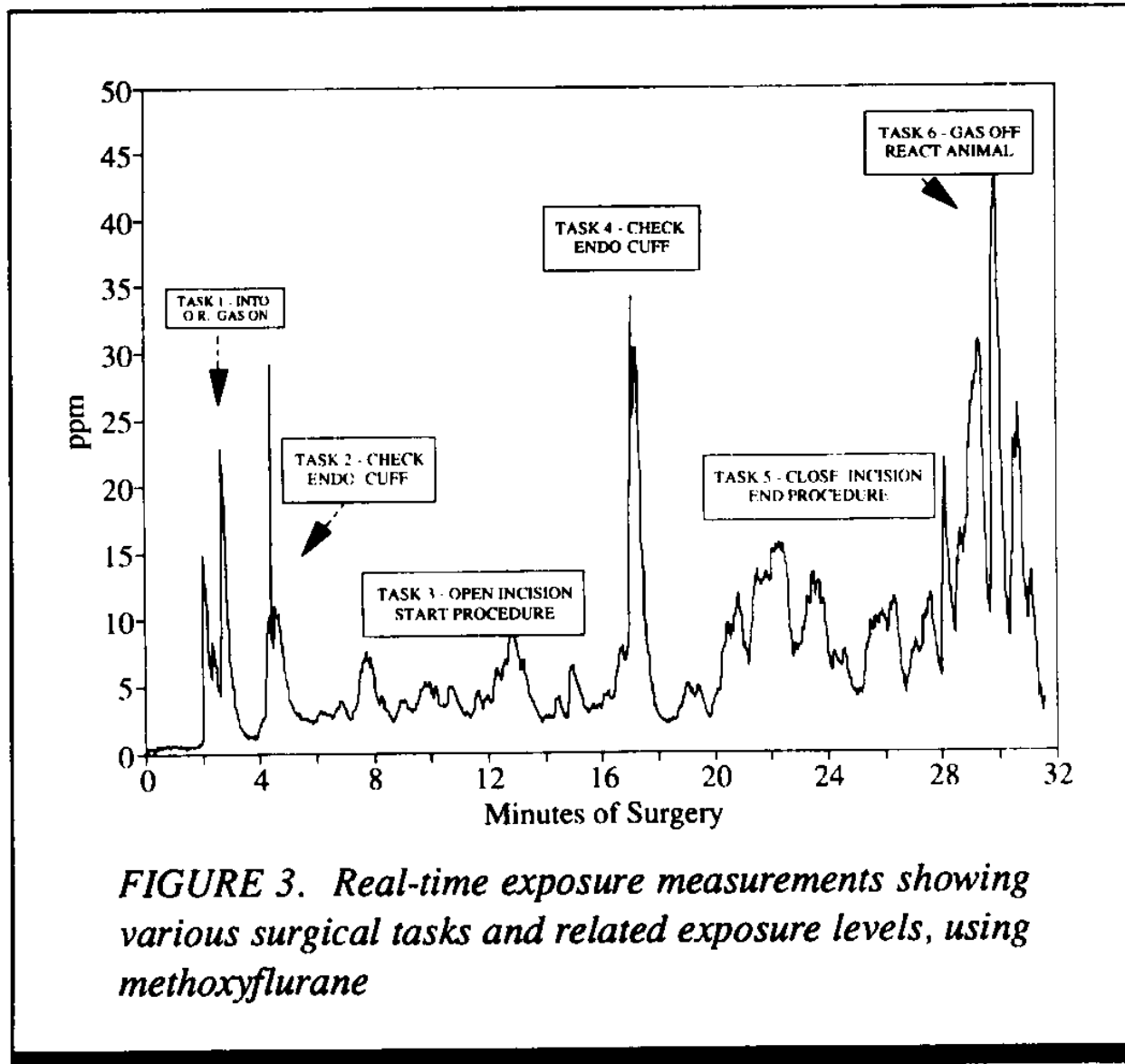


FIGURE 3. Real-time exposure measurements showing various surgical tasks and related exposure levels, using methoxyflurane

Combining photography with monitoring



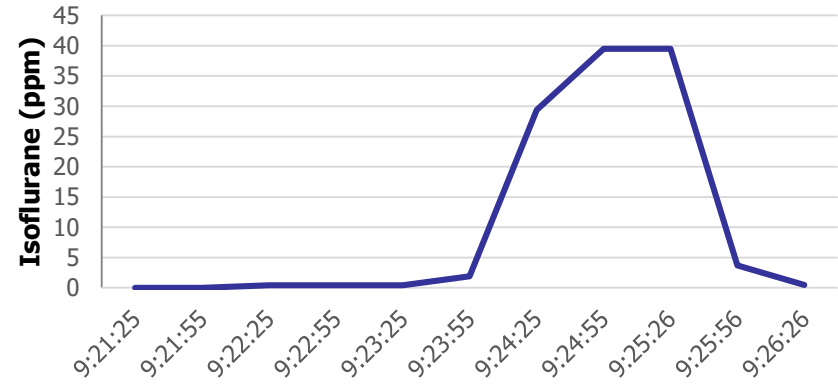
Isoflurane monitoring methods

- Passive sampler
- Direct reading instrument:
Miran gas analyzer



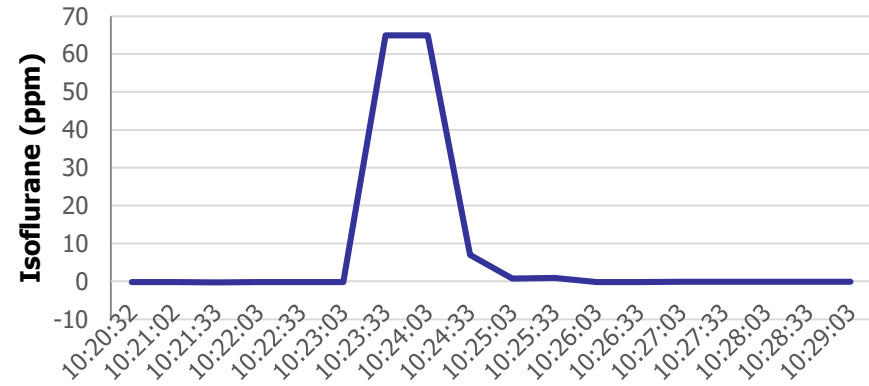
40 ppm over full canister

Measuring directly above over full canister

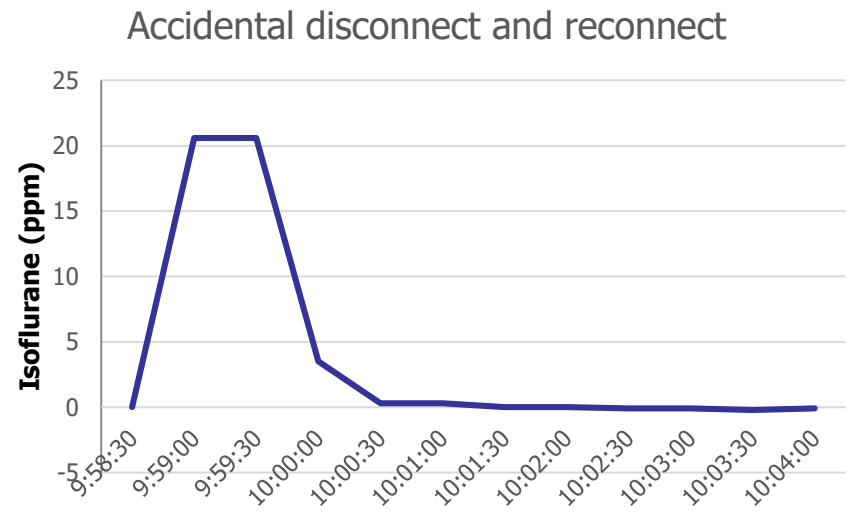


65 ppm when tube is disconnected & gas continues to flow

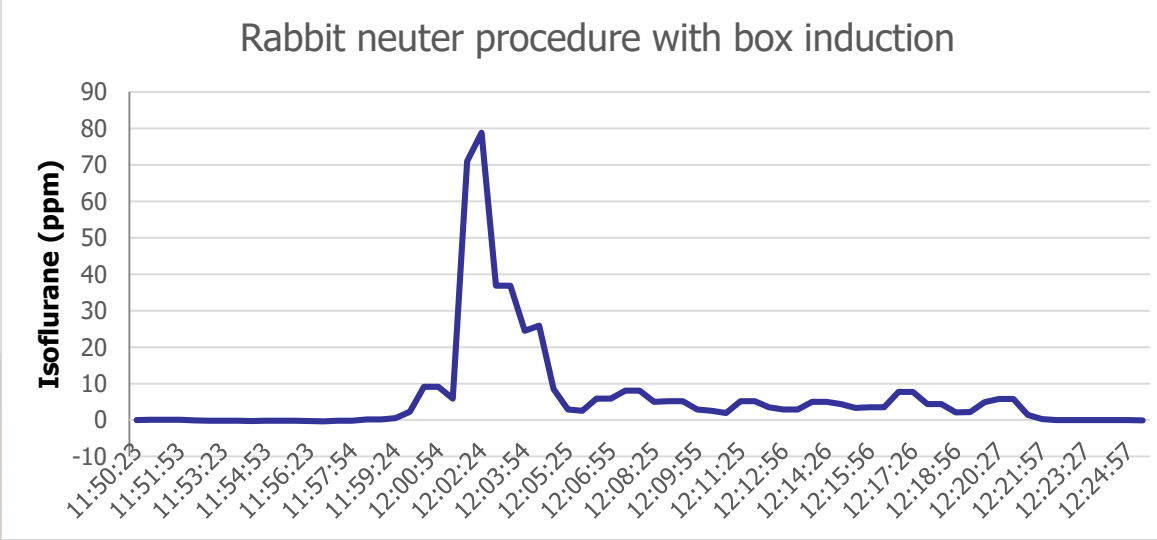
Disconnect from animal, roll animal, and gas not turned off.



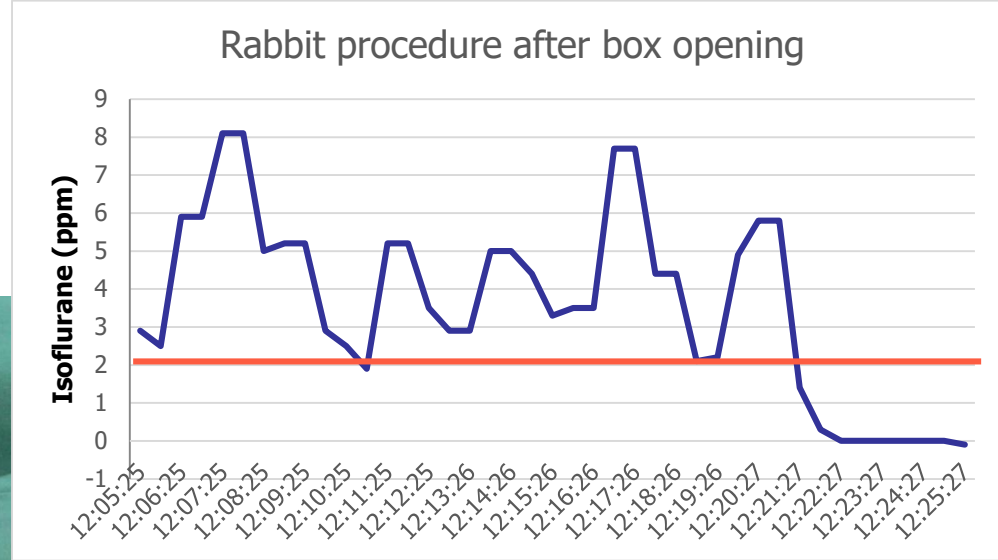
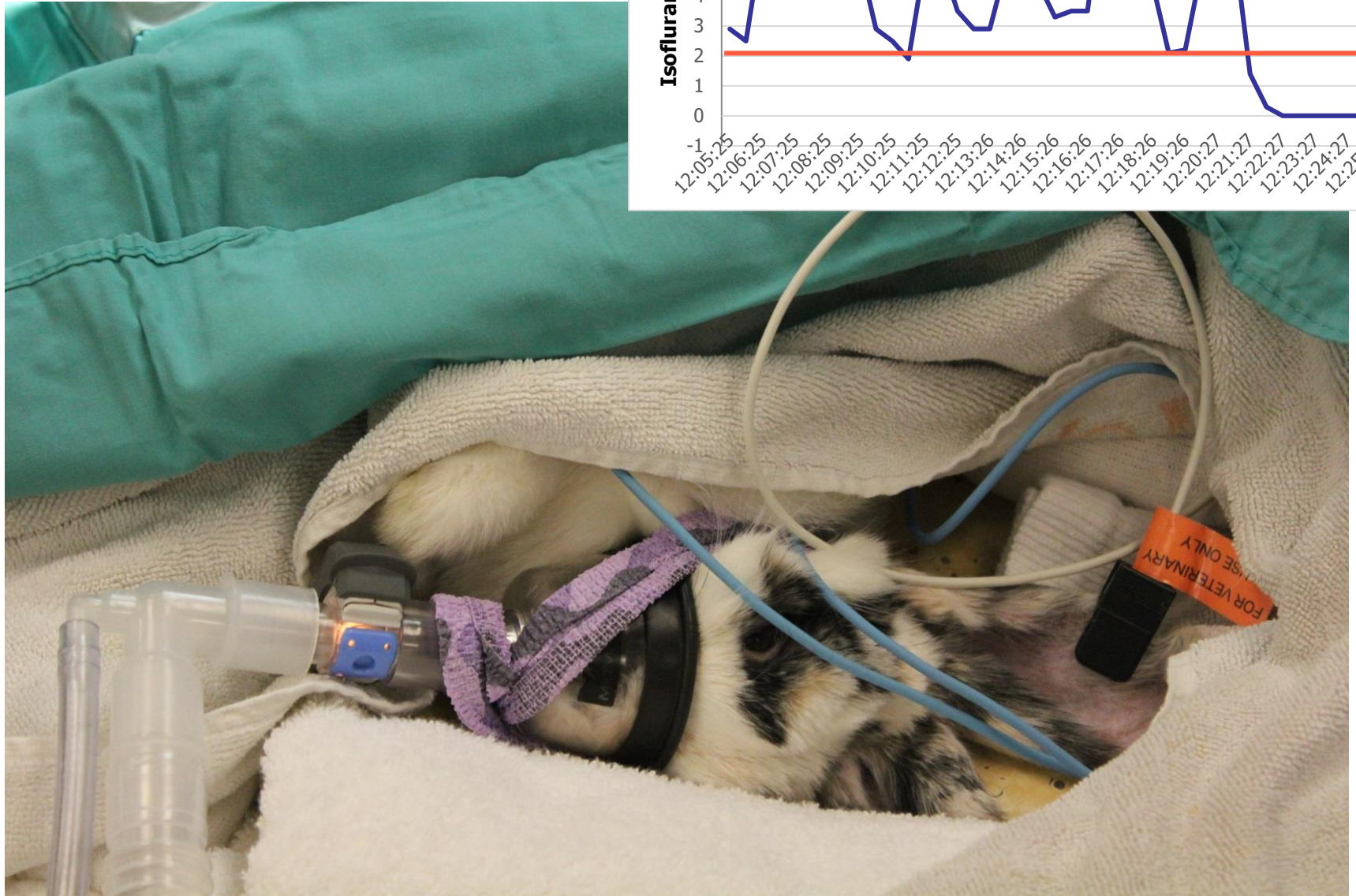
20 ppm during accidental tube disconnect



80 ppm peak during rabbit neuter procedure



Levels 2 to 8 ppm
after box opening



Next steps

- Fact sheet and website page
- Article for CVMA
- Presentations at veterinary technician conferences

Thank you to vet staff
and our field team!



Research on e-cigarette emissions: Vape Shop Worker Exposure Study



A collaboration with
the NIOSH Health Hazard Evaluation Program

What's the health concern?

- E-liquids containing nicotine + flavorings + carrier solvents are heated/vaporized
- Emissions not “just water vapor”
 - Diacetyl & 2,3-pentanediol often in liquids
 - Thermal breakdown products include HCHO & other aldehydes (carcinogens, asthmagens); metals
- Nicotine poisoning via skin contact?
- Until recently, completely unregulated products



A typical vape shop

Study questions

- Current workplace conditions in vape shops?
- Air and surface concentrations of chemicals?
- Do workers experience symptoms?
- What do employers and employees know about workplace risks?
- What can be done to improve health and safety?

Quantitative sampling

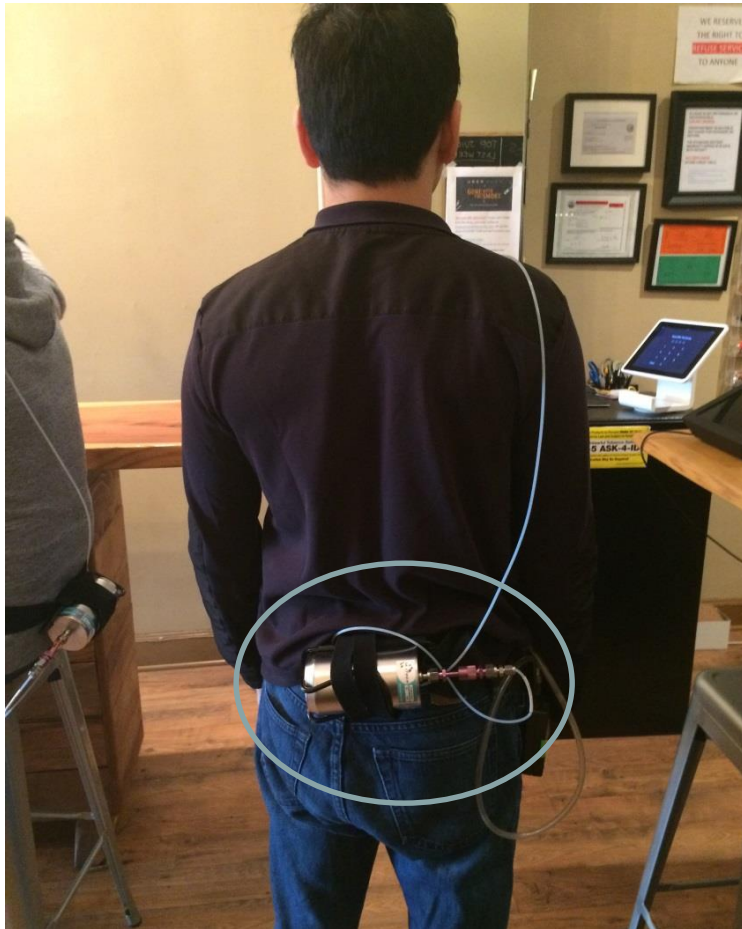
- Area &/or personal air sampling
 - Flavoring compounds: diacetyl & 2,3-pentanedione
 - VOCs*
 - Formaldehyde & other thermal degradation products
 - Nicotine
 - Particulate
 - Carrier solvents
- Wipe sampling for metals
- Bulk liquids



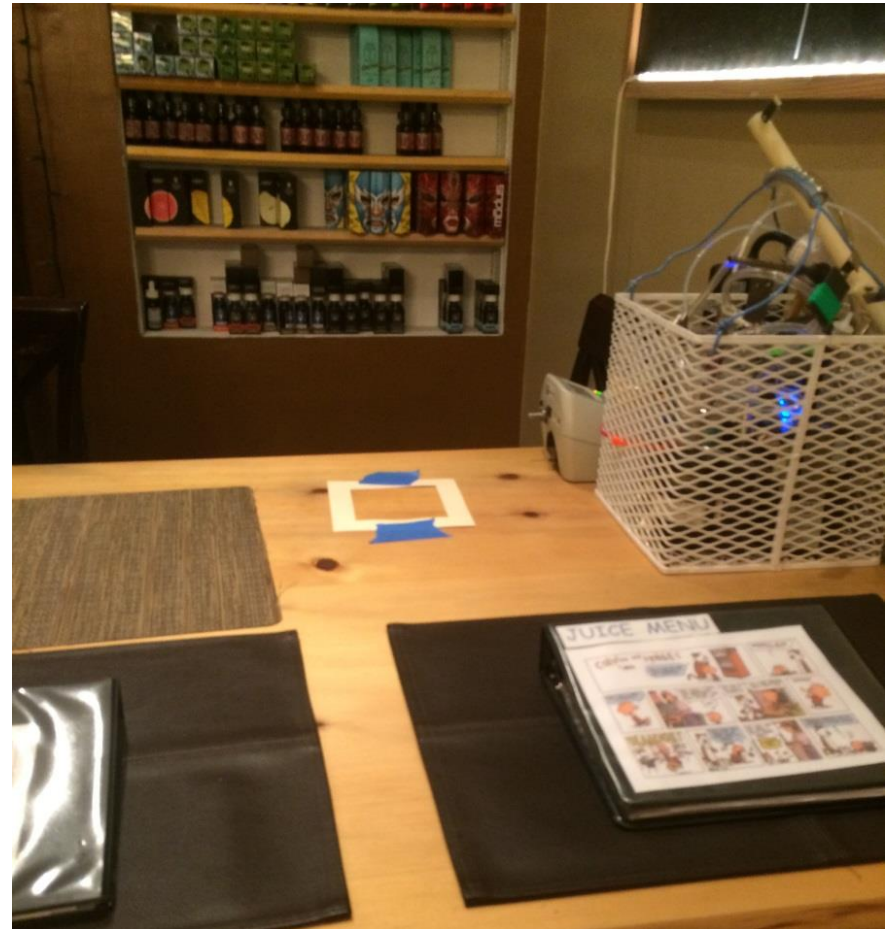
*Volatile organic compounds

Innovative sampling strategy

Canister



Wipe & area sampling



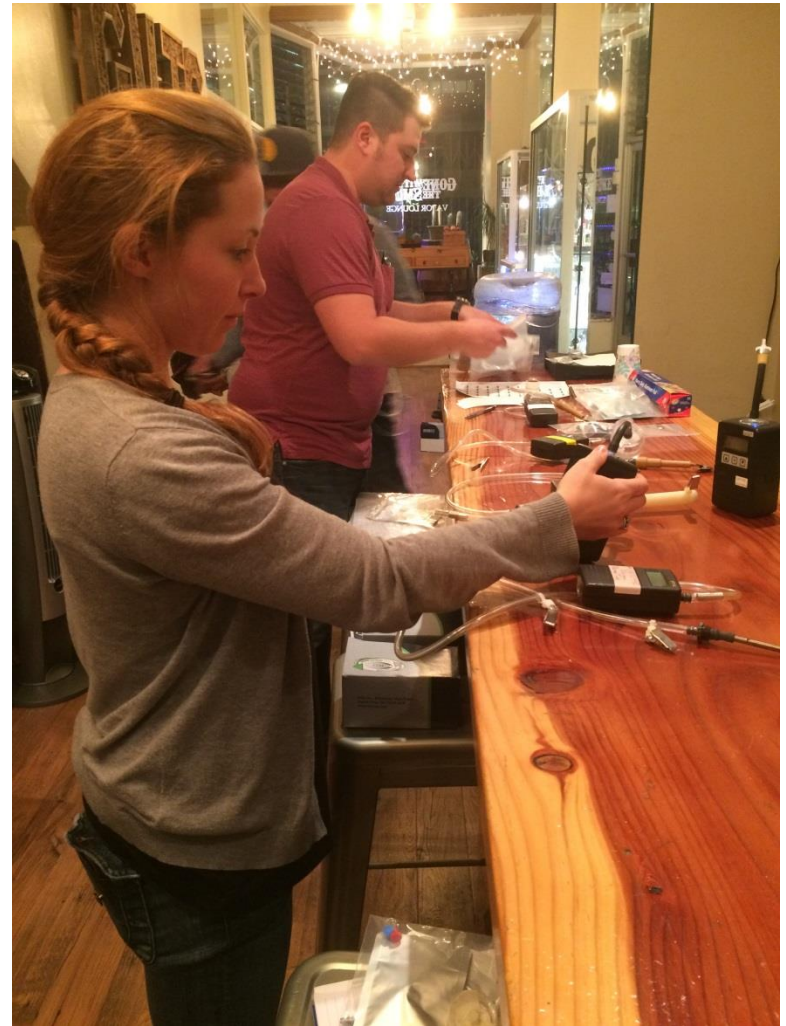
Interviews and site observations

- Interviews with employers and employees
- Observations of work practices



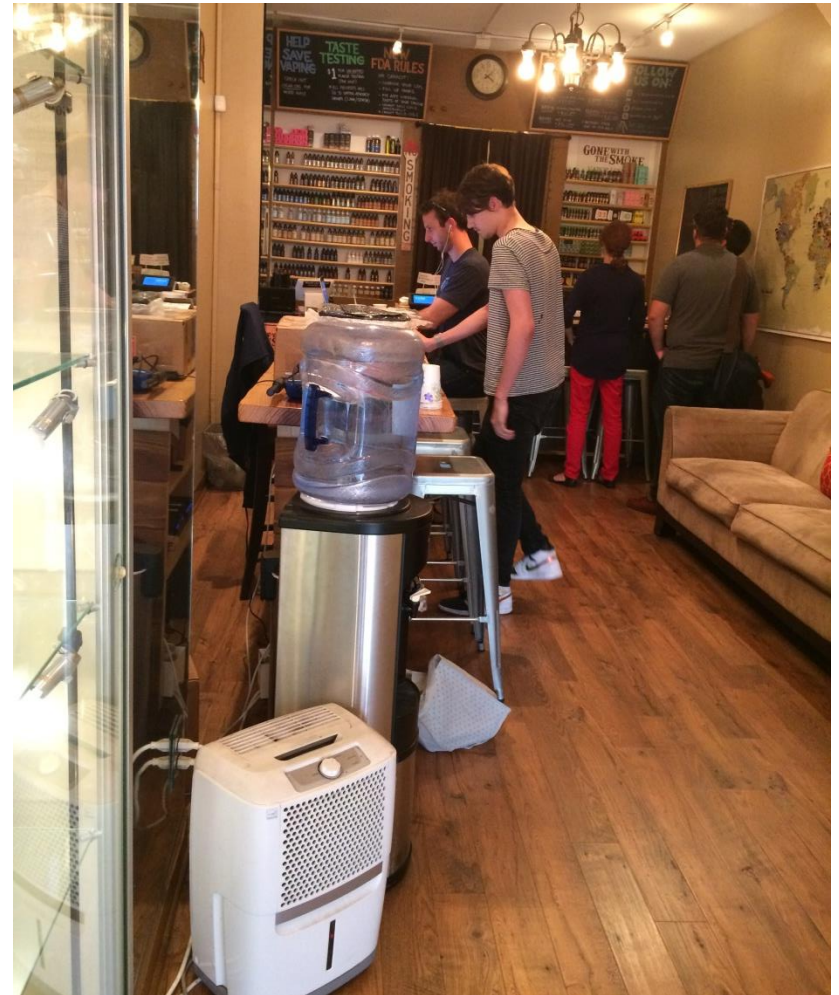
Benefits to participants

- Individual & shop sampling results
- Health and safety recommendations
- Overall findings



Issues identified to date

- Indoor air quality & ventilation
- Chemical handling, use of PPE
- Injury & Illness Prevention Programs



Education & outreach:
Some highlights from 2016

Latest digital story: Toxic paint removers: Safer alternatives



about news & events publications

research

research projects

small study program

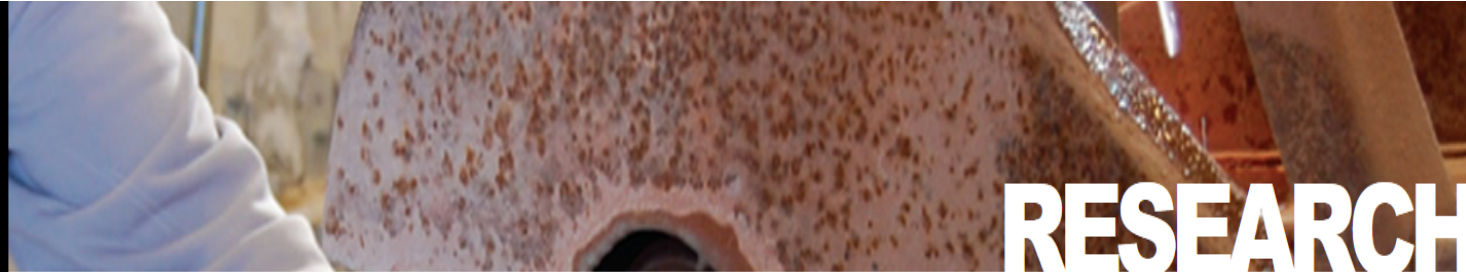
research to practice (r2p) library

safety culture & safety climate

methylene chloride

training

service

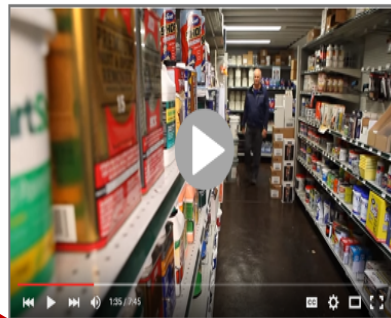


Resources to Protect Workers from Methylene Chloride (Paint Strippers)

Many liquid paint strippers and solvents contain a toxic chemical called methylene chloride. Exposure can lead to death or serious illness. Workers are at risk when they inhale methylene chloride vapors and when it comes in contact with their skin.

The following links contain additional information about the dangers of methylene chloride and safer alternatives.

Video: Toxic Paint Removers: Safer Alternatives



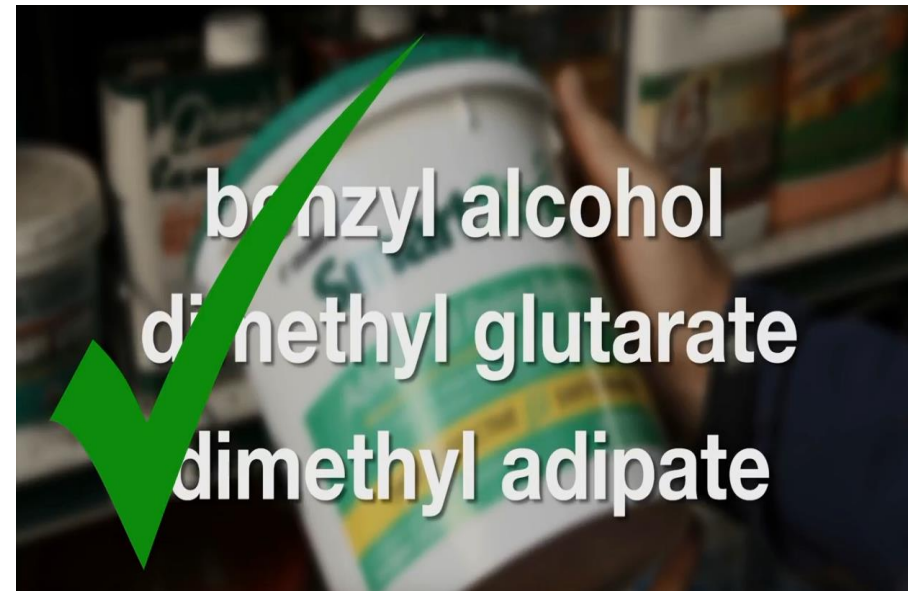
Other Resources:

- [Construction Solutions Hazard Analysis – Interaction with paint-related solvents](#) Describes the risks associated with paint-related solvents such as methylene chloride.
- [Construction Solutions – Safer Alternatives to Paint Removers Containing the Solvent Methylene Chloride](#) Offers a detailed list of safer products that can be used for paint stripping and refinishing, including the brand name and chemical content.
- [OSHA Safety & Health Topic: Methylene Chloride](#) Contains resources for workers, employers, and small businesses regarding jobsite safety guidelines.

JOIN OUR

CPWR is dedicated to reducing occupational injuries, illnesses and fatalities in the construction industry. Through our research, training, and service programs, we serve the industry in cooperation with key federal and construction industry partners nationwide.

Toxic paint removers: Safer alternatives



<http://www.cdph.ca.gov/programs/ohb-face/Pages/Stories.aspx>

Preventing Valley Fever in outdoor workers

VALLEY FEVER

Coccidioidomycosis or "cocci"

Do you work outdoors?

Have you had a cough, fever, or painful breathing for more than two weeks?

REPORT SYMPTOMS TO YOUR EMPLOYER AND SEE A DOCTOR ABOUT VALLEY FEVER

Valley Fever is caused by a fungus that lives in soil or dirt in some areas of California.

You can get it by breathing in dust where the fungus grows.

ANYONE can get Valley Fever. Even healthy people.

People who work outdoors in dirt or dusty areas where the Valley Fever fungus grows may be at more risk of getting sick, especially those who do activities such as:

- Digging
- Truck driving
- Construction work
- Operating heavy machinery



If you work outdoors in such areas:

- Stay upwind of dirt disturbance,
- Wet soil before digging,
- Wear a respirator, or
- Ask your employer about other ways to keep dust down



For more information, visit <http://bit.ly/cdphvfwork> or call the CDPH Workplace Hazard Helpline (866) 282-5516



FIEBRE DEL VALLE

coccidioidomycosis o "cocci"

¿Trabaja al aire libre?

¿Ha tenido tos, fiebre o dolor al respirar por más de dos semanas?

INFORME A SU EMPLEADOR SOBRE CUALQUIER SÍNTOMA Y CONSULTE A SU DOCTOR SOBRE LA FIEBRE DEL VALLE

La Fiebre del Valle es causada por un hongo que vive en el suelo o la tierra de ciertas zonas de California. Usted la puede contraer al respirar polvo donde crece el hongo.

CUALQUIERA puede contraer la Fiebre del Valle. Aun las personas sanas.

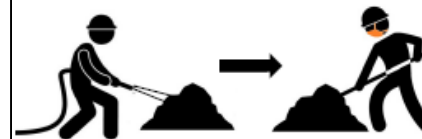
Las personas que trabajan al aire libre en la tierra o las zonas polvorientas donde crece el hongo de la Fiebre del Valle pueden correr mayor riesgo de infectarse, especialmente si hacen actividades como:

- Excavar
- Conducir camiones
- Trabajar en construcción
- Operar maquinaria pesada



Si trabaja al aire libre en estas áreas:

- Manténganse alejado del viento de donde se altera la tierra,
- Moje la tierra antes de excavar,
- Use una mascarilla (un respirador) o,
- Pregunte a su empleador sobre otras formas de reducir el polvo



Para más información, visite (en inglés): <http://bit.ly/cdphvfwork> o llame a la línea de ayuda de riesgos laborales (866) 282-5516



Updated HESIS e-fact sheet: Mercury

- Focus on
 - Breaks & spills
 - Fluorescent bulb manufacture & recycling
- Updated health effects, info on biomonitoring
- Directs reader to more resources

Mercury in the Workplace

Metallic mercury (also known as elemental mercury or Hg) is a potent neurotoxin that can cause health damage in very small amounts. It is liquid at room temperature and readily evaporates into the air. Workers can be exposed to mercury if they breathe the mercury vapor or have skin contact with it. They can also be exposed if instruments or equipment containing mercury break and release mercury-containing dust, liquid, or vapor. Cal/OSHA requires employers to protect their employees from mercury exposure on the job. This fact sheet is about **metallic mercury**.

Is there mercury at your workplace?

There could be if you work at a...

- Fluorescent bulb recycler
- Hardware store, landfill, or waste facility where fluorescent light bulbs are handled or recycled
- Lighting equipment manufacturer
- Dentist office
- Health care facility
- Laboratory
- Facility with mercury-containing instruments or equipment
- Drinking water or wastewater treatment plant

Instruments and equipment that contain mercury can break and release mercury.

Some examples include:

- Fluorescent light bulbs
- Switches in thermostats
- Pressure gauges at water treatment plants
- Blood pressure gauges and other medical instruments
- Equipment used in plumbing, heating, and air conditioning
- For more information about products that contain mercury, see [Northeast Waste Management Officials' Association mercury fact sheets](#)



The most tilt switch
Photo: Medeviv



Photo: Christian Taube

Note: See Page 6 for a list of links used in this fact sheet with corresponding web addresses (URLs).



MAY 2016

California Department of Public Health • California Department of Industrial Relations



Pressure gauges at a wastewater treatment plant
Photo: Dana Point Times/Andrea Papagaris

HAZARD EVALUATION SYSTEM & INFORMATION SERVICE
California Department of Public Health, Occupational Health Branch
850 Marina Bay Parkway, Building P, 3rd Floor, Richmond, CA 94804
510-620-5757 • CA Relay Service: 711 • www.cdph.ca.gov/programs/ohb

Avoiding disinfectant use in schools: Cleaning with microfiber

- Disinfectants can cause or trigger asthma
- Asthma-safer cleaning project pilot testing microfiber alternative
- New law requires DPR* training if using disinfectants



*Department of Pesticide Regulation

Stay in touch with OHB

E-newsletter:

*Occupational Health
Watch*

Subscribe:

OHW@cdph.ca.gov

February 2016

OHB Occupational Health Watch
An Update from the Occupational Health Branch • California Department of Public Health

Focus on...

Forward to a Friend

New Digital Story Highlights the Dangers of Methylene Chloride-Containing Paint Strippers

Jason is a former painter who almost died from exposure to a paint remover containing methylene chloride. He was using the product to strip the interior of a yacht when he was overcome by the product's toxic vapors.

A new digital story (video) produced by the [California Fatality Assessment and Control Evaluation \(FACE\) program](#) explains Jason's tragic incident, the hazards of using methylene chloride-containing paint strippers, and the safer alternatives that are available.

Watch the video



Watch the video

Resources

[Methylene Chloride](#) – OHB web page

[FACE Program Digital Stories](#)

OHB improves California worker health and safety through prevention activities. We gather information on job hazards, test new approaches to prevent worker injury and illness, and help make changes at the workplace.



OHB staff acknowledgements

- **Vet hazards investigation:** Jennifer McNary, Kathleen Attfield, Tracy Barreau, Rick Votava, Kashyap Thakore, Saeher Muzaffar
- **Vape shop study:** Kathleen Attfield, Marley Zalay, plus NIOSH Health Hazard Evaluation Program
- **Education/outreach:** Laura Styles, Robert Harrison, Jason Wilken, Mary Deems, Jennifer McNary, Tracy Barreau, Debbie Shrem, Faith Raider

Use our resources & services

- OHB website: www.cdph.ca.gov/programs/OHB
- Workplace hazard helpline:
1-866-282-5516 (toll-free in CA)
- Invite us to speak at your events
- Barbara Materna, PhD, CIH
Chief, Occupational Health Branch
California Department of Public Health
850 Marina Bay Pkwy, P-3
Richmond CA 94804
barbara.materna@cdph.ca.gov or 510-620-5730