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Work-related Asthma in California

Important, common, and preventable

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Work-related Asthma Prevention Program (WRAPP)

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- Since 1993
- Funded by NIOSH, the Occupational Health arm of the Centers for Disease Control (CDC)
- Conducts public health surveillance, case follow-up, makes prevention recommendations

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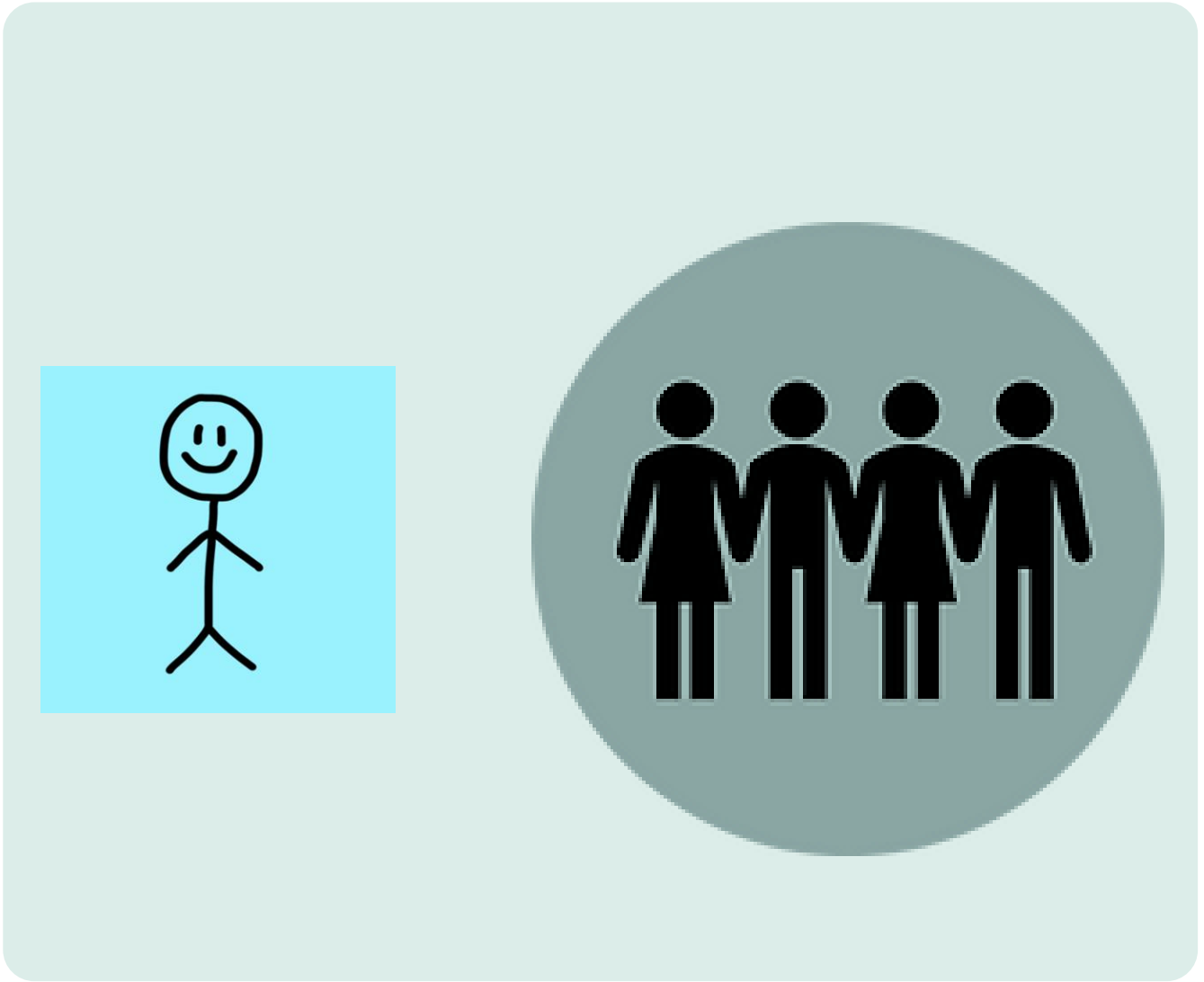
Asthma- Adults vs Kids

Is there a difference?



More adults have asthma than kids??

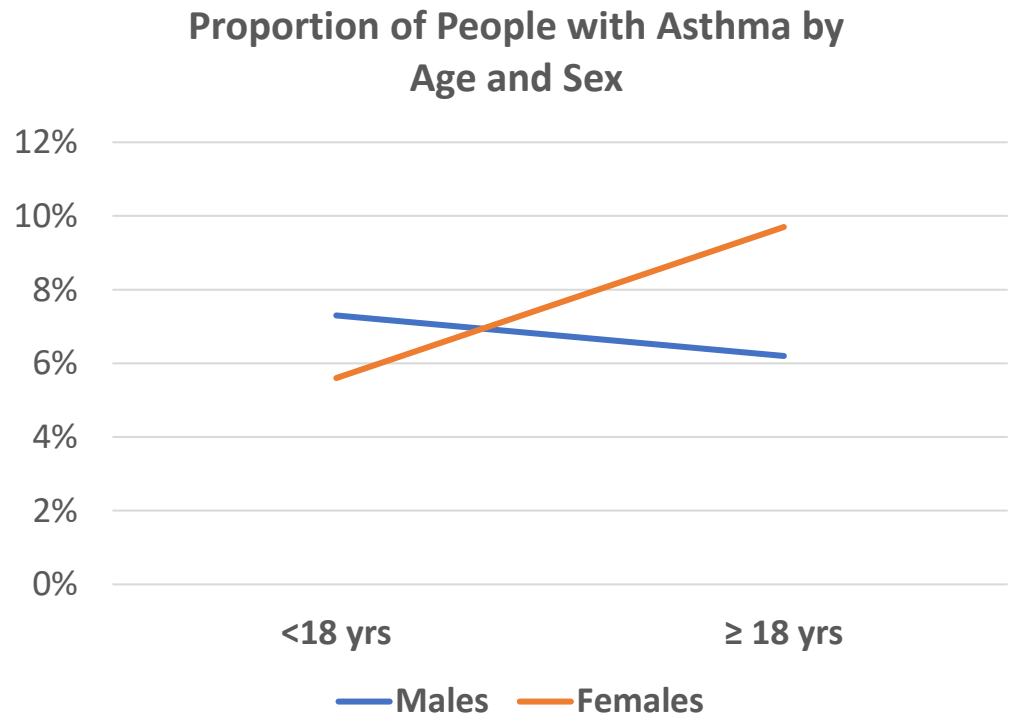
For every child with asthma, 4 adults have asthma



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Adult asthma, compared to pediatric

- 20.2 million adults have asthma, compared to 4.7 million kids*
- Similar proportion have asthma attacks
- 145 (2/million) children per year die of asthma in US, compared to 3,372 (13/million) adults



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* National Health Interview Survey 2021

More info about adult asthma

It's going up

- Adult asthma prevalence increased from 6.9% in 2001 to 8.0% in 2021*

Many people develop asthma as adults

- Some people grow out of childhood asthma, but many get it as adults
- 58% of adults with current asthma developed it after age 16**

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*National Health Interview Survey
**Mirabelli, 2013

Burden of adult asthma

- In CA, 38% of adults with current asthma missed days of work or usual activity due to asthma in the last 12 months*
- Adults with asthma in the U.S. miss about 14 million work days each year. This equals about **$2 billion** of asthma indirect costs.**



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*BRFSS Asthma Call Back Survey, 2022
** Asthma and Allergy Foundation of America, 2015

Disparities also affect adults with asthma

Adults are less likely to get care when cost is an issue

Adults with lower income and less education have higher prevalence of asthma



Black adults are 2.5x more likely to die from asthma than white adults

An estimated 38% of asthma hospitalizations among CA Black adults are preventable

Adults are Workers

- **The same adults at high risk for asthma may also be in jobs that add to their asthma risk**
  - At least half of waking hours at work
  - Workplace exposures as important as household exposures, often more preventable
  - Not just ‘dirty industry’ jobs that are high risk for WRA
  - Often seen in primary care, emergency room, family practice







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Case Example - Custodian



- 41-year-old custodian, worked at a public high school for 4 years, no asthma history
- Cleaned small bathroom, graffiti removal
- No safety training
- Developed difficulty breathing and coughing, more than 12 ER visits, at first diagnosed with bronchitis, then asthma
- Symptoms improved when out
- Transferred to elementary school
- Symptoms improved when away from chemicals

What is Work-related Asthma (WRA)?



WRA is asthma that is caused or made worse by conditions or substances at work.

Case Example- Teacher



- 54-year-old special ed teacher, long history of mild asthma
- Returned from spring break, carpets cleaned, lingering strong chemical odor, immediate breathing problems
- Left work, out for 1 week
- 2 years later, still many medications and reacts to many triggers daily
- Now carpets cleaned with water

Health Care Providers don't ask about work

- Studies have shown that only 2-19% of asthma patient medical records have work information
- Among adults with asthma, 46% had asthma that was work-related, but only 15% discussed work factors with their health care provider



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Lost Opportunity

- Work should be a common part of clinician-patient dialogue-- it is an important opportunity for prevention in adult asthma
- The longer the time from symptoms to diagnosis, the poorer the outcome
- Patient may not recognize association of work and symptoms, may be afraid of work consequences

Case Example- Carpenter/Construction

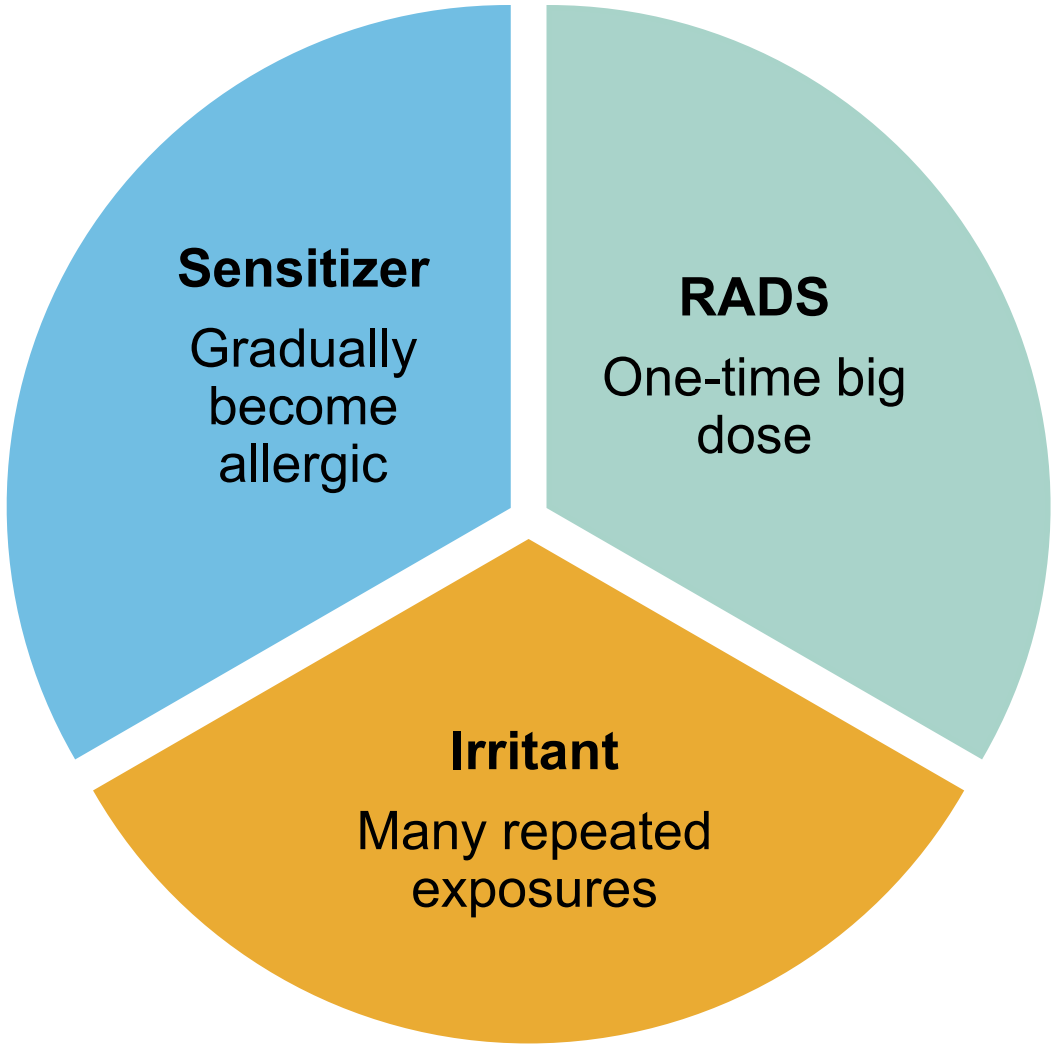


- 37-year-old carpenter, built houses and buildings. No asthma history
- Original doctor visit for nail gun injury. Doctor heard wheezing, asked about work. Only used painter's dust mask, bought on his own
- Wood dust in air at work, couldn't breathe
- Diagnosed with WRA, reported 5 of 20 co-workers had similar breathing problems. Changes were made at work

WRA definition:

- Health care provider's diagnosis of asthma AND relationship between symptoms and work exposures
- Includes new onset in people who didn't previously have asthma, and work-aggravated in people who have pre-existing asthma
    - Many examples of mild intermittent asthma that is now severe and constant due to work exposures

Different kinds of new-onset WRA



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How Common is Work-related Asthma?

15-58% of adult asthma attributed to work, depending on the study

2022 survey data estimates that 44% of California adults with current asthma have experienced WRA

It is estimated that over a million adults in California have asthma caused or made worse by work

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Case Example- Temp office worker



- 50-year-old woman working for a temp agency assigned to the office of a construction company, doing data entry.
- Lifelong asthma, but no problems for years, didn’t carry inhaler
- One day strong pesticide odor. Immediate symptoms and had to go home. Home for 3 days. Company found ant spray had been used
- Still has breathing problems and now takes 2 meds regularly. Both temp agency and assigned company took problem seriously

Tracking WRA in California



WRA tracking sources of data

Health Care Provider Reports

Workers' Compensation Data



Hospital stay data

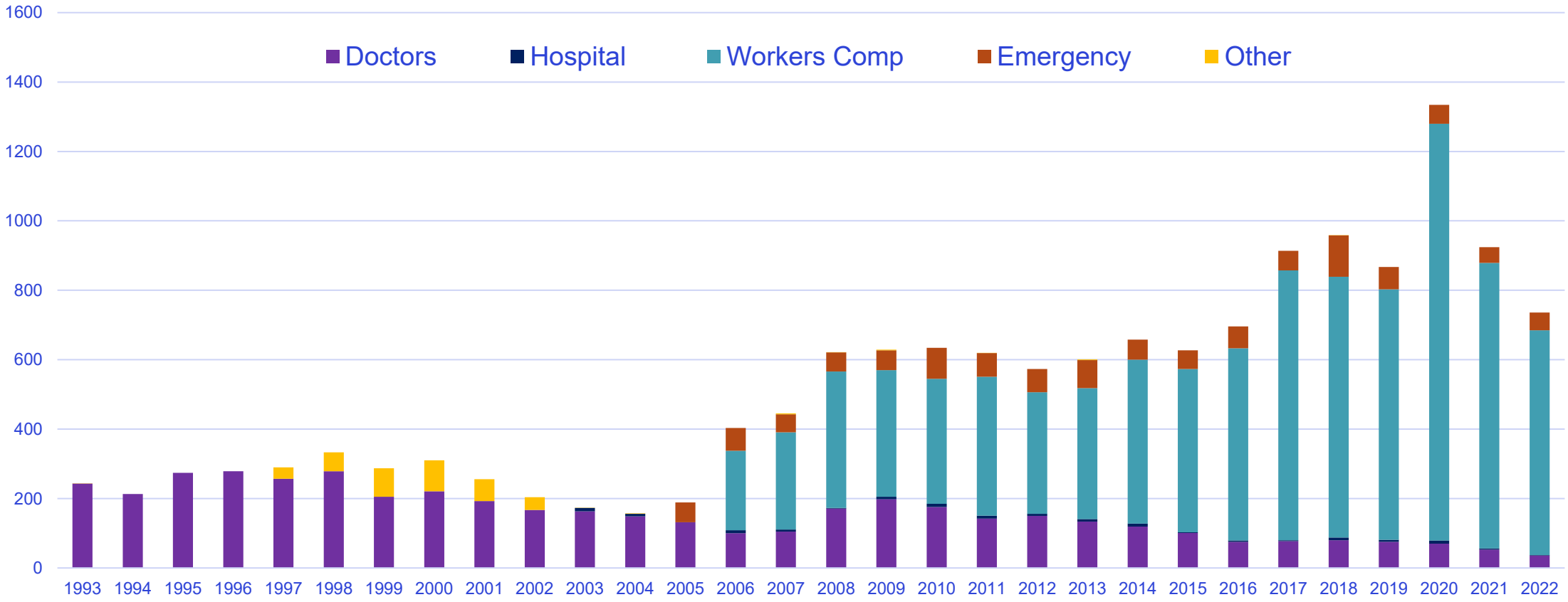
Emergency Department data

Tracking details

- Confirmed 15,452 cases 1993-2022 (undercount)
- Try to interview everyone, use interviews and med recs to characterize risk factors, identify prevent strategies
- Doesn’t capture everybody
- Risk factors – who’s getting it and how
- Case reports

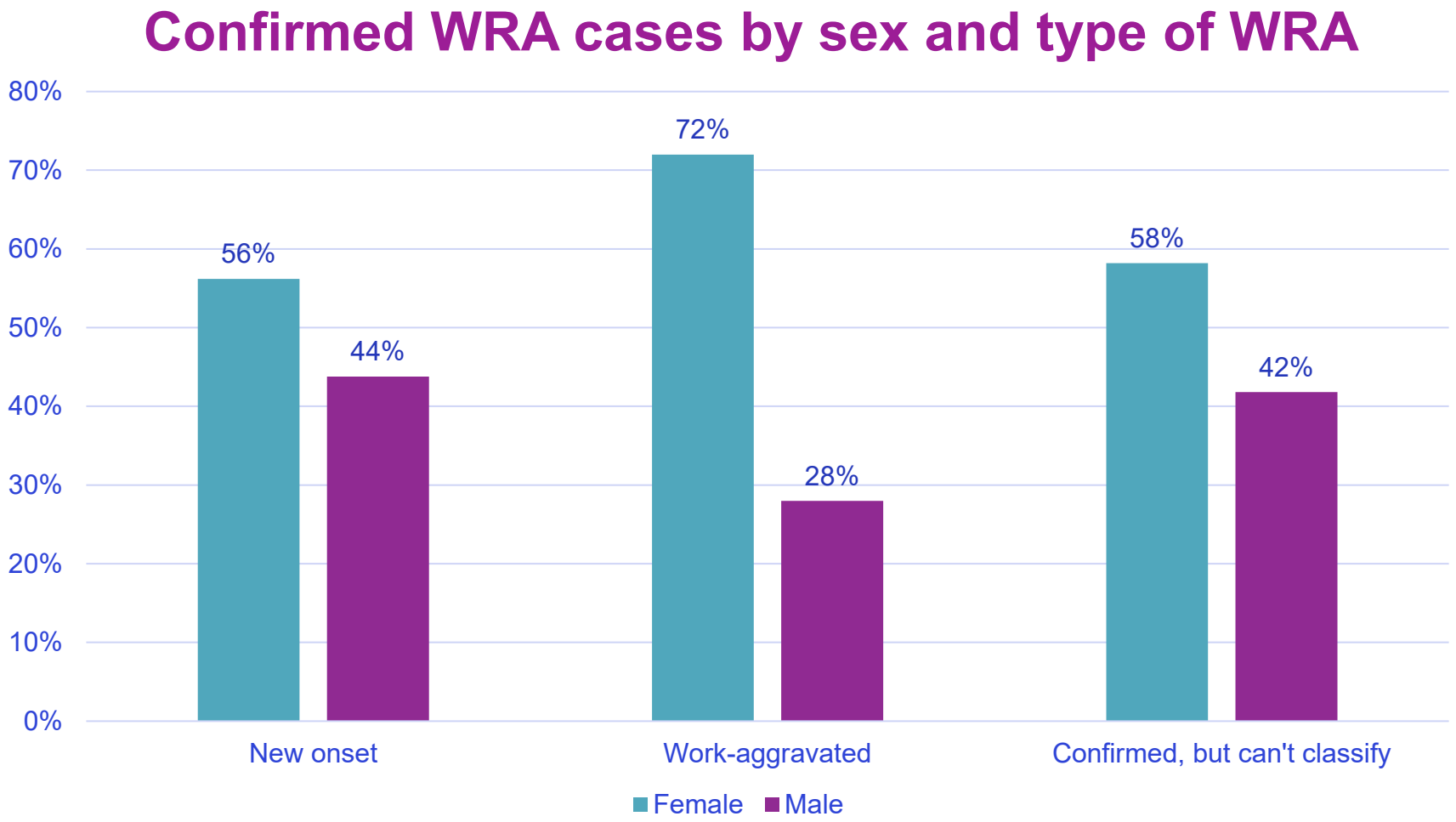
Cases have been increasing

Confirmed WRA cases by year and report source



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Women have more WRA than men



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Exposure

Essential to understand and prevent WRA

- Self-reported
- Association of Occupational and Environmental Clinics (AOEC) list of exposures
- Protocol for determining if a substance is an ‘asthmagen’ –capable of causing new asthma
- Nearly 400 substances designated as asthmagens
- Especially important for prevention

Case Example- Medical Technician



- 60-year-old woman cleaned scopes at a hospital x 2 years. No asthma history
- Normally cleaned for just a few minutes at a time. One day cleaned for 3.5 hours straight, no break
- Same chemicals (asthmagens) as always, but much bigger dose. Developed headache and wheezing, had to go to ER, off work x 1 month. Diagnosed with WRA.
- Returned to work, modified duty in different area of dept, still has to avoid chemicals, perfumes, etc.

20 exposures most reported by WRA patients

- Dust
- Unspecified chemicals
- Smoke
- Mold
- Indoor air pollutants
- Cleaning chemicals
- Indoor air pollutants from building renovation
- Paint
- Perfume
- Pesticides
- COVID-19
- Bleach
- Cigarette smoke
- Exercise
- Plant materials
- Glues
- Heat
- Diesel exhaust
- Pepper spray
- Chlorine

20 asthmagens most reported by WRA patients

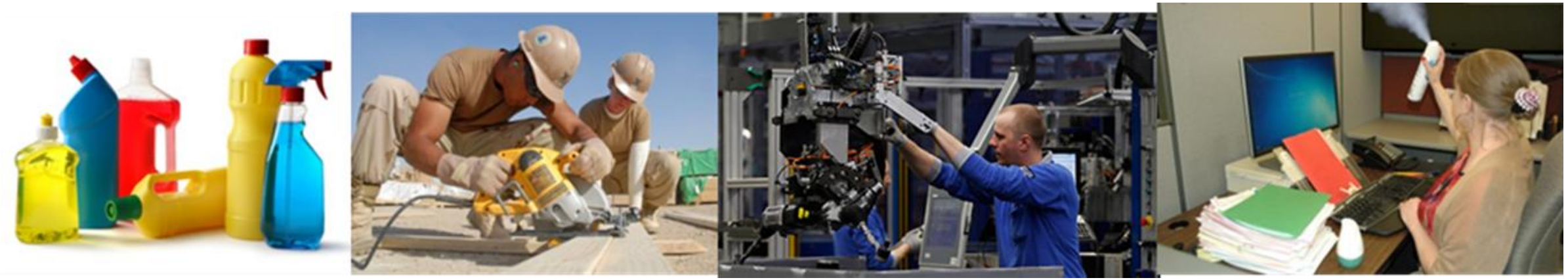
- Bleach
- Chlorine
- Diesel exhaust
- Ammonia solution
- Latex
- Sulfuric acid
- Formaldehyde
- Quaternary ammonium compounds
- Glutaraldehyde
- Diisocyanates
- Rat dander
- Flour
- Cat dander
- Epoxy
- Hydrochloric acid
- Mice
- California Redwood
- Anhydrous ammonia
- Cannabis (dust or smoke)
- Mites

Examples of common exposures by occupation

Occupation	Most Common Exposures
Firefighters	Smoke, diesel exhaust
Science Technicians	Acids, chemicals, animal dander
Health Care Workers	Disinfectants, cleaning chemicals, smoke, latex, perfume, pharmaceuticals
Beauty Workers	Dyes, chemicals, adhesives
Construction Workers	Cement dust, wood dust, exhaust, glues, paint
Landscaping	Pollen, pesticides, dust, plant materials
Police and Correctional Officers	Pepper spray, smoke, dust, mold
Auto Painters	Isocyanates
Cleaning Workers	Cleaning chemicals, disinfectants, mites, animal dander
Food Service, Bakers	Flour, grains, cleaning chemicals

WRA is widespread

- Large numbers, big variety of exposures and jobs
- Work should be asked about as routinely as environmental exposures, especially since exposure often is more preventable

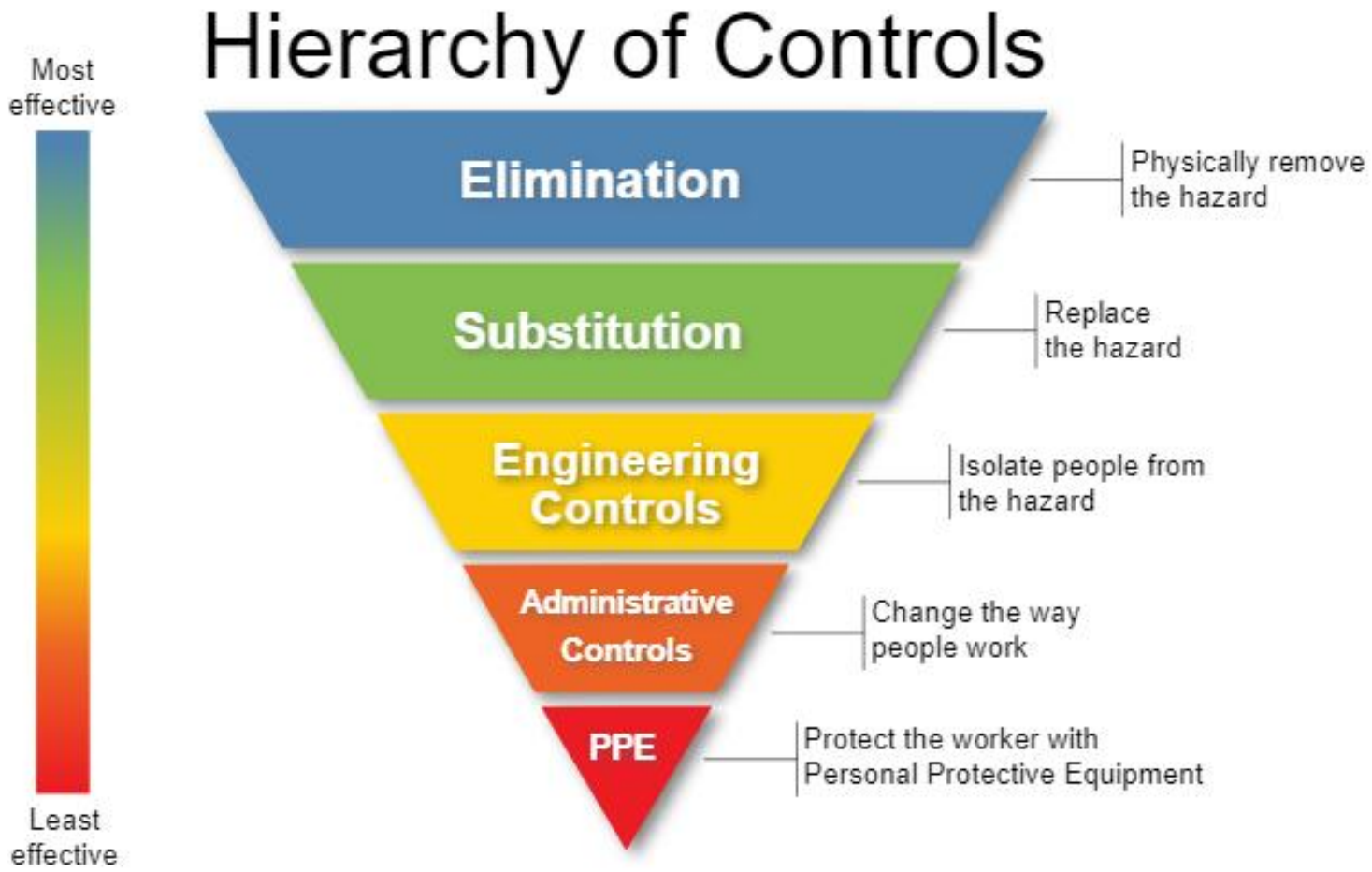


Case Example- WIC Program Asst

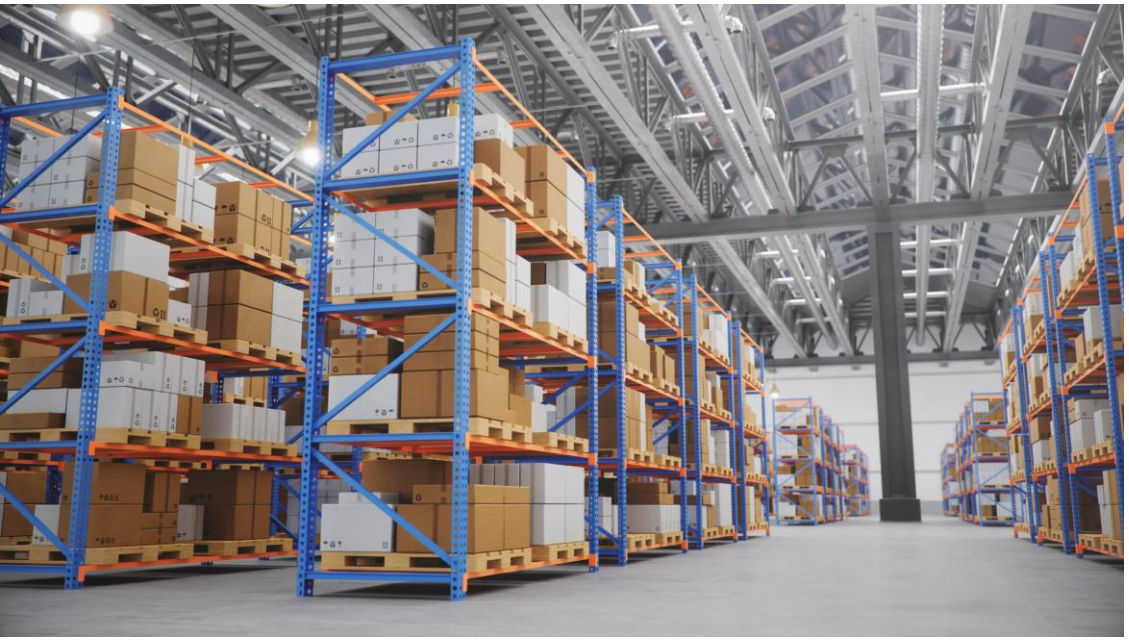


- 47-year-old woman worked x 4 yrs in a county office as a WIC nutrition asst. No asthma history
- A co-worker began to wear a new perfume. After 3 days, the patient noticed throat feeling like it was closing. Day 4 came in and found she couldn't breathe. Went to ER in ambulance
- Diagnosed with WRA. Temporarily moved to more isolated place in office
- Office adopted a fragrance-free policy and her asthma has been no problem at work

Prevention is essential: stop exposure



Case Example- Cannabis worker



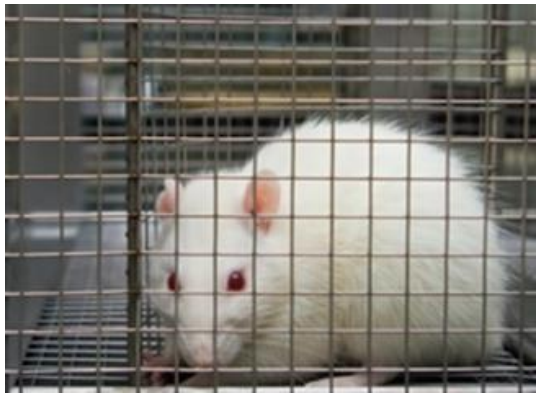
- Man in his 20's worked in a cannabis warehouse connected to a dispensary, packaged raw product
- After a few months, developed shortness of breath and wheezing; used mother's inhaler
- Symptoms improved when took 6 weeks of paternity leave. After 2 months of return to work, had severe asthma attack and died at work.
- The warehouse has discontinued grinding and packaging. He had an appt to see his mother's asthma doctor for the week after he died.

Prevention considerations

- Workers may not make the connection between work and asthma
- Workers may not want to bring up concerns at work
- Workers may fear retaliation
- Workers often have little control in their workplace









- Workers may not know of their rights and resources
- Other workers are also likely at risk in same workplace

Case Example- Painter



- 37-year-old man worked as a residential painter for a company for 13 yrs.
- Had pre-existing asthma, worse in spring
- Assigned to paint staircase with lacquer, very strong fumes. Didn’t have inhaler, had to go to emergency room (unconscious)
- Back to work the next day. Employer never gave any kind of personal protective equipment. Still has increased breathing problems and bought own mask. Knows of one co-worker with breathing problems but not about others because 'we don't talk about those things.'

Community Health Workers have an important role in WRA prevention



Identifying WRA

Talk with adults about their breathing problems

Most households have at least one working adult—ask what work people do

Even just three questions can help identify if work conditions are affecting asthma

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Screening questions

- Are there locations, materials, or activities at work that make your asthma worse?
- Is your asthma better on days off or on vacation?
- Does asthma get worse throughout the work week?















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What should workers with WRA do?

- Talk to their doctor about their asthma and work. Tell them what makes it better and worse
- Learn about exposures at work—ask for Safety Data Sheets for substances used
- If asthma is caused or worsened by work, can file a workers compensation claim
- Learn about rights and protections—employers are required to provide a safe and healthy workplace

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Care for patients with WRA

- Clinically, follow guidelines for management of adults with asthma
- Can refer to occupational medicine specialist
- Proceed cautiously with confidentiality—prevent job loss
- Essential to control exposure—employer's responsibility, sometimes simple, sometimes complicated

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Conclusions









- Work-related asthma is a significant public health problem in California, affecting >1 million adults
- Yet, largely under-recognized and diagnosed
- As part of routine evaluation, clinicians should **always** ask adults what they do for a living, and if their asthma sx are worse at work and better during time off
- Opportunities for prevention are frequent and achievable
- Relevant to all who evaluate or advocate for anyone who works and has asthma

For your Awareness: Silicosis in Countertop Workers

- Incurable lung disease that can co-exist with asthma or be misdiagnosed
- Caused by breathing in the dust from fabricating countertops for kitchens and bathrooms
- Over 680 workers so far, most confirmed in the last 3 years
- Questions or to report a case: Silicosis@cdph.ca.gov



Resources

CDPH WRAPP

- cdph.ca.gov/WRAPP
- email workrelatedasthma@cdph.ca.gov
- (800) 970-6680

Workers' Comp

- dir.ca.gov/dwc
- email dwc@dir.ca.gov
- 800-736-7401

Cal/OSHA

- dir.ca.gov/dosh
- email DOSHEnforcement@dir.ca.gov
- 833-579-0927

Resource: WRA questions to ask adults with asthma

- Are there locations, materials, or activities at work that make your asthma worse?
- Is your asthma better on days off or on vacation?
- Does your asthma get worse throughout the work week?

If yes to any of the above:

- What do you think caused your breathing problems?
- Do you believe any substances, activities, or processes caused or worsen your asthma?

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