

Vinyl Chloride

Health Effects and Reducing Exposure

Learning Objectives

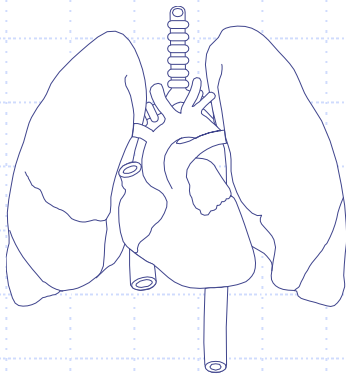
- ◆ Identify sources of vinyl chloride
- ◆ Discuss health effects of vinyl chloride
- ◆ Determine actions for reducing exposures to vinyl chloride

Uses and Sources

- ◆ Found at 496 National Priority List sites
- ◆ Colorless, flammable gas with a mild, sweet odor
- ◆ Used to make polyvinyl chloride (PVC)
 - Plastic pipes
 - Wire
 - Cable coatings
 - Furniture and automobile upholstery
 - Many hospital products
- ◆ Tobacco smoke

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How Are We Exposed?

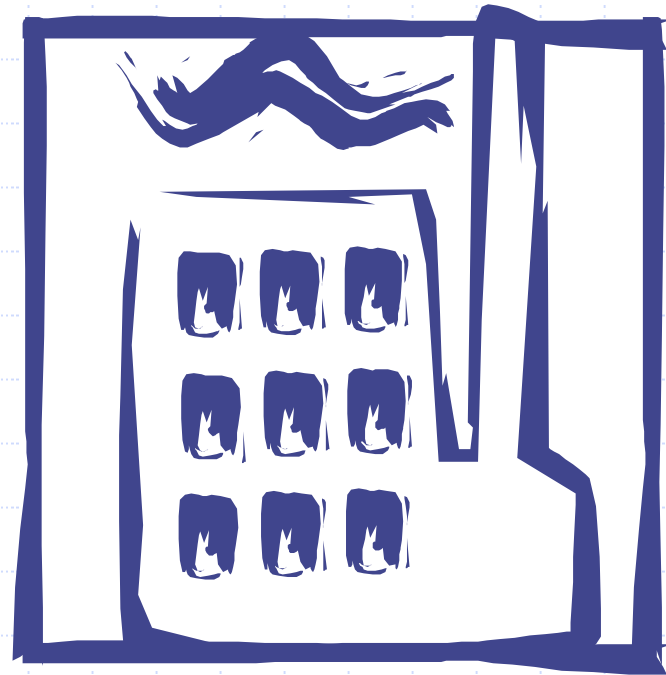


- ◆ Breathing air emissions during creation of PVC, or during burning in incinerators
- ◆ Drinking water contaminated by spills or after air emissions deposit in water
- ◆ Breathing vapors while showering with contaminated water
- ◆ Inhaling tobacco smoke



Health Effects: Inhalation

- ◆ Irritation
- ◆ Coughing
- ◆ Shortness of breath
- ◆ Headache
- ◆ Nausea/vomiting
- ◆ Dizziness and sleepy
- ◆ Loss of consciousness
- ◆ Death



Health Effects: Organ Systems

- ◆ Liver damage and cancer
- ◆ Cancer – connective and soft tissue, brain
- ◆ Skin – numbness, redness, blisters
- ◆ Autoimmune – scleroderma, Raynaud's syndrome, arthritis
- ◆ Nerve damage
- ◆ Peripheral vascular disease
- ◆ Possible reproductive effects

Indications of Exposure

- ◆ Tests are available but not routinely offered in regular doctor's offices
 - Breath – only good shortly after exposure
 - Urine – for breakdown product, not specific for VC and only shortly after exposure
 - Blood and tissue

What to Do?

- ◆ Have water tested for VC if suspected contamination
- ◆ Do not burn PVC plastic or dispose of in a way that will lead to a municipal incinerator
- ◆ Work exposure
 - Ensure proper ventilation, enclosure, and protective equipment
 - Wash immediately after exposure and before going home
 - Change clothes at work, launder separately

Policy

◆ EPA

- Clean Water Act Maximum Contaminant Level is 0.002 mg/L
- Clean Air Act reference concentration is 0.1 mg/cubic meter
- Spills of 1 pound or more must be reported

◆ OSHA

- 8-hour day/40-hour week maximum air limit is 1 part per million (ppm), measured by area air monitoring
- 15 minute maximum level is 5 ppm

◆ FDA

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- Regulates the amount of VC in food packaging

Resources

- ◆ ATSDR ToxFAQs
<http://atsdr1.atsdr.cdc.gov/tfacts20.pdf>
- ◆ NJ Fact Sheet
www.state.nj.us/health/eoh/rtkweb/2001.pdf
- ◆ EPA Water Fact Sheet
www.epa.gov/OGWDW/dwh/t-voc/vinylchl.html
- ◆ Scorecard www.scorecard.org/chemical-profiles/summary.tcl?edf_substance_id=75%2d01%2d4

In Review

- ◆ What is vinyl chloride and how are we exposed to it
- ◆ How does vinyl chloride effect our health
- ◆ How can we reduce our exposure to vinyl chloride