



### Contaminants & Source Control Fact Sheet

- Exposure Routes include inhalation, ingestion, skin absorption, and injection

$$\text{Risk} = \text{Hazard} \times \text{Exposure}$$

- Why does this matter? Asthma
  - Asthma is an environmental disease which means that many things commonly found in the environment can trigger an asthma attack
    - Allergens
      - Foods, cockroaches, dust mites, indoor molds, pests, pets, pollens, and outdoor molds
    - Irritants
      - Strong odors, aerosol sprays, and smoke
    - Other common triggers
      - Exercise, weather conditions, colds and flu, stress
- Districts can drastically reduce risks that might be associated with occupant exposures to environmental contaminants which would benefit in the following ways:
  - Reduce clinic visits and better asthma control
  - Increase student achievement and improved test scores
  - Increase in funding (depending on states funding formula)
- Contaminant sources in schools
  - Contaminants in schools can impact occupant health and cause or contribute to symptoms experienced by occupants. These include:
    - Chemical contaminants (irritants)
    - Legacy Toxics
      - Lead and Asbestos
    - Radon
    - Biological contaminants (allergens)

#### Chemical Contaminants (Irritants)

- Chemical contaminants are often found in art rooms, classrooms, photography rooms, industrial technology rooms, science rooms, technology labs, and custodial closets
- Staff can also create unintended exposure hazards through the ways in which they occupy their spaces. The district can minimize these exposures by enforcing appropriate procedures and policies.
- NFPA Fire Label is a numerical range of 0 to 4 to indicate severity of the hazard. 0 is known for being a 'minimal' hazard while a 4 is considered 'extreme'



#### Legacy Toxics

- Asbestos
  - A fibrous carcinogenic silicate mineral that is composed of long, thin silicate fibers became popular among manufacturers in the late 19<sup>th</sup> century due to its sound

absorption, strength, resistance to fire, heat, electrical and chemical damage, and affordability

- Commonly found in 8x8 and 9x9 floor tiles, vermiculite insulation, some siding and roofing materials, and caulks and adhesives
- Asbestos continuously breaks down into smaller particles that become so small they often penetrate organs at a microscopic level into the body cavity

- Lead

- Naturally-occurring bluish-gray metal that was frequently used in products because of its durability, pigment, corrosion inhibitor, drying agent, abundance, and low cost
- Found in paint, ceramics, pipes, gasoline, batteries, and even cosmetics
- Lead can be inhaled (primary route for occupation exposure), orally digested (primary route for general population exposure, especially children), or dermal (through skin)
- Children are more vulnerable to the side effects of lead which include cholic, low birth weight, anemia, IQ deficits, and even death
- Lead is typically found in paint in older schools (pre-1978 construction), stains, varnishes, art room pottery glazes, plumbing and solder

## Radon

- A naturally occurring gas produced by the breakdown of uranium and radium in the ground
- Leading cause of lung cancer in nonsmokers
- Fix radon issues in existing schools by testing the facility for radon, seal floors and cracks in foundation, seal up and pipe conduits, vent radon gas from below slab, and operate HVAC systems to maintain positive pressure throughout the facility



## Biological Contaminants

- Can be brought into the facility by occupants and routine activities or “home grown”
  - Brought in allergens
    - Cat, dog, cockroaches, pollens, and outdoor molds
  - Home Grown allergens
    - Cockroaches, furry pests, dust mites, mold associated with indoor moisture issues

## Cleaning for Health

- There has been a philosophical change in the purpose of and the techniques used to clean and maintain school facilities which is to clean for health
  - This can describe safer and healthier custodial practices and procedures that may reduce unwanted occupant exposures to the products used to clean and maintain the facility
- Effective means of reducing unnecessary occupant exposures to hazardous chemicals:
  - Source control, restricted use of more hazardous substances, implementation of integrated pest management, substituting safer and healthier alternatives for existing products, and construction/renovation activities are performed when the facility is unoccupied

