

Laurie Hudson, Ph.D.
Professor of Toxicology
UNM School of Pharmacy

ABQ Water Supply

- Chemicals related to the KAFB Bulk Fuels Facility Spill are EPA regulated and monitored
- *More information:*
 - US EPA Safe Drinking Water Hotline (800-426-4791).
 - Public water quality report available in English and Spanish
 - Albuquerque Bernalillo County Water Utility Authority
<http://www.abcwua.org/content/view/507/796/>

Aviation gasoline (Avgas) and jet fuel JP-4 and JP-8

- Complex mixtures containing Volatile Organic Compounds and other chemicals
- Most VOC exposures are work-related (skin and lung) and OSHA regulated
 - Potential Health risks:
 - neurologic (inhalation)
 - decreased numbers of white blood cells in rodents
 - Unknown whether JP-4 or JB-8 affect reproduction or cause cancer in people [International Agency for Research on Cancer (IARC)].

From the 2010 Water Quality Report

- **Volatile Organic Compounds**
- Ground water contamination sites that may threaten wells include:
 - Kirtland Air Force Base Bulk Fuels Facility Spill
 - Fruit Avenue Superfund site
 - Gulton Industries site at I-40 and Tramway
- **These wells are monitored more frequently**

Why does EPA regulate chemicals?

- Evidence for potential human health impact
 - From laboratory studies
 - From population studies
- The US EPA sets a Maximum Contaminant Level (MCL) for many hazardous chemicals.
 - MCL=the maximum amount which can legally be present in drinking water, and represents ‘acceptable risk’ (not ‘no risk’).
 - EPA periodically reviews MCL values to keep them up-to-date with recent scientific results.
 - MCL levels often in parts per million (ppm) or parts per billion (ppb)



1 ppm=311 people from the
US population



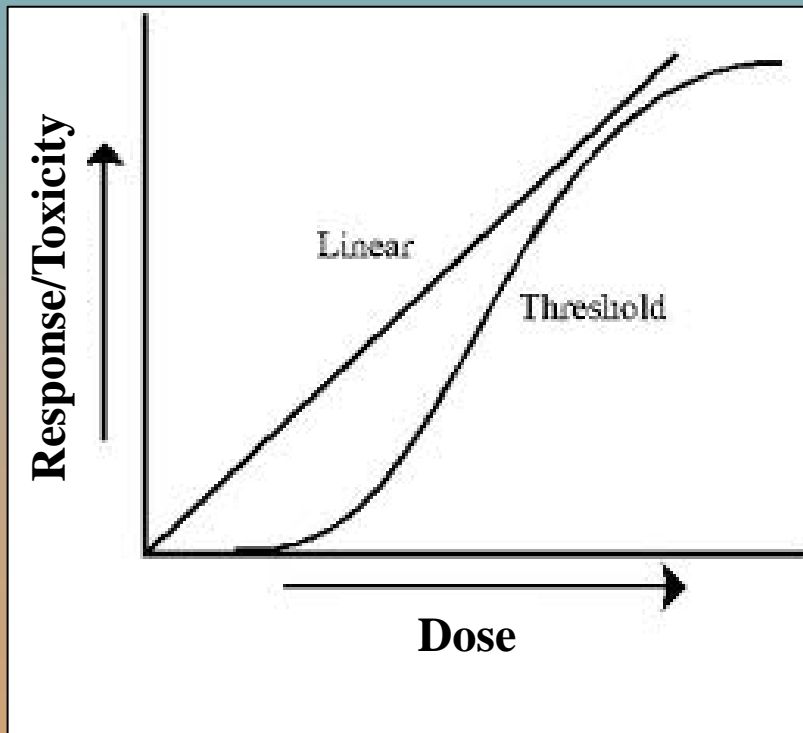
1ppb=7 people from the
earth's population

What other chemicals in Avgas and jet fuel are EPA regulated?

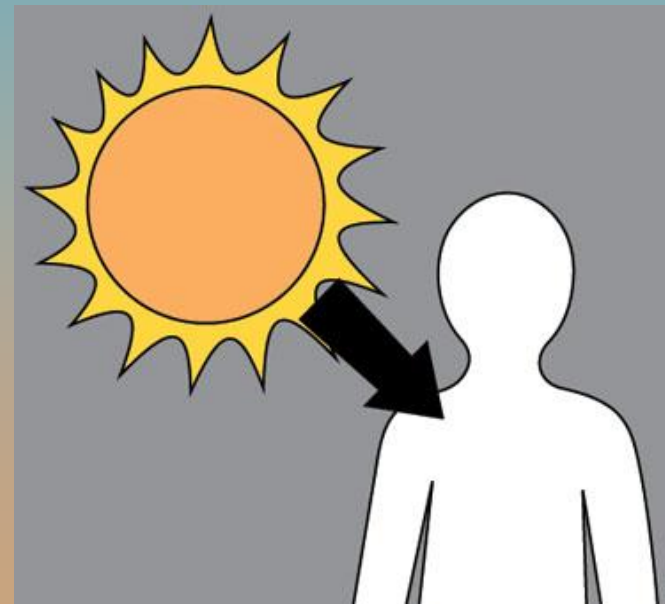
Chemical	Level	Health risks
Benzene	5 ppb	anemia, cancer risk
Toluene	1 ppm	liver, kidney & neural
Ethylbenzene	700 ppb	liver & kidney
Xylenes	10 ppm	neural
Ethylene dibromide	0.050 ppb	liver, kidney, stomach & cancer risk
PAHs	0.2 ppb	Reproduction/cancer
Lead	15 ppb	Children- neurological Adults-kidney, blood pressure

Individual response to chemicals or environmental hazards depends on many factors.

Dose (how much)



Duration (how long)



TIME →
Vit D Sunburn

Other factors affecting individual response

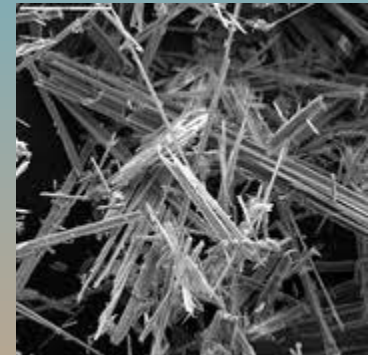
Route of Exposure



Additional Exposures



Smoking



Asbestos

Other factors affecting individual response

- Individual characteristics (age, sex, nutritional status, genetic traits, general health).



Status of EPA regulated chemicals in Albuquerque/Bernalillo County Water (2010 water quality report)

Chemicals of concern

- Benzene, Toluene, Ethylbenzene, Xylenes
- Polycyclic aromatic hydrocarbons
- Ethylene dibromide
- Lead (multiple sources but primarily plumbing)

Water Test results

- Not detected
- Not detected
- Not detected
- Maximum detected 2 ppb, no sources at action level (15 ppb)