

CASE STUDY: ENVIRONMENTAL ARSENIC EXPOSURE

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GOALS

- Search Internet for information on environmental contamination
- Locate web sites containing chemical-specific toxicological data and regulatory criteria

HYPOTHETICAL CASE STUDY

- 15 year-old male
- Presents with severe dermatitis and skin lesions, eye and respiratory irritation, hair loss, weight loss, nausea, diarrhea
- Liver function tests indicate elevated enzymes

RELEVANT HISTORY

- XYZ Landfill located on property adjoining patient's residence
- XYZ Landfill currently being investigated by U.S. EPA
- Patient rides dirt bike on landfill (x 5 yrs)
- Private well provides potable water

POSSIBLE ENVIRONMENTAL EXPOSURE?

- Check U.S. EPA - Region III's web site for information on XYZ Landfill
- **<http://www.epa.gov/region03/>**

WEB SITE FINDINGS

- XYZ Landfill is proposed for U.S. EPA's National Priorities List
- Proposal for listing suggests presence of environmental contamination
- Analytical data not yet available on web site

E-MAIL OR PHONE U.S. EPA WITH QUESTIONS

- Preliminary environmental sampling has been conducted at XYZ Landfill
- Findings: noteworthy levels of arsenic detected in surface soil and ground water
- Residential areas not yet evaluated

POTENTIAL EXPOSURE ROUTES

- Inadvertent ingestion of soil
- Dermal contact with soil
- Inhalation of airborne particulate
- Ingestion of ground water
- Dermal contact with ground water

SEARCH INTERNET FOR TOXICOLOGICAL DATA

- TOXNET
- Maintained by National Library of Medicine
- **<http://toxnet.nlm.nih.gov/>**

TOX DATA SEARCH (con't.)

- Integrated Risk Information System
- Maintained by U.S. EPA
- **<http://www.epa.gov/iris/>**

RISK-BASED CONCENTRATIONS

- Risk-Based Concentration Table
- Maintained by U.S. EPA - Region III
- <http://www.epa.gov/reg3hwmd/risk/riskmenu.htm>

REGULATORY CRITERIA - GENERAL

- <http://www.epa.gov/>
- Click on *LAWS AND REGULATIONS*
- Click on *MAJOR ENVIRONMENTAL LAWS*
- Provides list of U.S. EPA regulations

REGULATORY CRITERIA – ARSENIC

- In this case, concern is focused on soil and ground water contamination
- Very few chemicals have established regulations for soil
- RBC Table provides generic soil levels for protection of public health
- Check web for ground water regulations

REGULATORY CRITERIA – ARSENIC (con't.)

- <http://www.epa.gov/>
- Click on *PROGRAMS*
- Scroll down and click on *WATER*
- Click on *GW PROTECTION PROGRAMS*
- Click on *DRINKING WATER STANDARDS*
- Click on *ARSENIC*

OTHER SOURCES

- U.S. EPA - Office of Children's Health Protection
- <http://www.epa.gov/children/index.htm>