

Obtaining an Exposure History from Records

CLCW SME training August, 2017

Purpose of an Exposure History

- Many hazardous exposures from environmental and occupational sources either manifest as common medical problems or have nonspecific symptoms, an exposure history is vital for a correct diagnosis, which past studies have shown can be made from a patient's history in 60-90% of cases.
- One must be suspicious and think about the possibility of environmental and occupational factors of disease.
- Environmental and occupational factors contribute to more than 25% of all global disease [Smith et al. 1999; WHO 2007]
- A chart review of 2,922 histories taken by 137 third-year medical students showed that smoking status was documented in 91%, occupation in 70%, and specific occupational exposures in 8.4% of the total number of cases. [Marshall et al. 2002; McCurdy et al. 1998]

Examples of Environmental & Occupational Causes of Medical Problems [Goldman and Peters 1981; Nelson et al. 2011]

Symptoms and Diseases	- Agent -	Mode of Exposure
headache	carbon monoxide, solvents	firefighting, automobile exhaust, wood finishing, dry cleaning
hepatitis	halogenated hydrocarbons (e.g., carbon tetrachloride)	solvents, lacquers, hospital workers
bladder cancer	â-naphthylamine, benzidine dyes	dye industry, leather, rubber-workers, chemists
aplastic anemia, leukemia	benzene, ionizing radiation	chemists, furniture refinishing, cleaning, degreasing, radiation
behavioral changes	lead, carbon disulfide, solvents, mercury, manganese	battery makers, smelting, viscose rayon industry, degreasing, manufacture/ repair of scientific instruments, dental amalgam workers

Components of an Environmental History

A proper forensic evaluation includes past medical, social, family and occupational histories. The criteria employed are the same as those used for diagnosing other medical problems:

- History, including onset.
- Exposure and effects can be acute or chronic.
- Laboratory results-its not cancer until it is cancer [tumor or neoplasm vs malignancy, primary vs metastatic disease]
- There may be more than one organ system affected.
- The latency period from exposure to disease manifestation can vary, ranging from immediate to delayed (hours or days) or prolonged (decades).
- You cannot have disease without exposure!

Organ Systems Affected by Toxic Exposure

- Kidney
 - Organic solvents and heavy metals are two major classes of toxicants known to adversely affect renal function. Cadmium, lead, mercury, solvents.
- CNS
 - Neurotoxicants can cause: Peripheral neuropathy, ataxia, parkinsonism, seizures, coma, and death. In acute setting may appear inebriated. Tetrachloroethylene, mercury, arsenic, toluene, lead, methanol, noise, VC. Chronic disease must be preceded by a prior symptomatic exposure.
 - Benzene can cause bone marrow changes leading to: Aplastic anemia, acute leukemia, and chronic myelogenous leukemia.
- Hematologic

Sources of Indoor Air Pollution

Possible indoor contaminants include:

- Asbestos: lung cancer, mesothelioma, asbestosis
- Biologic agents: animal dander, mold, bacteria, dust mites, viruses- respiratory disease
- Building materials: formaldehyde-asthma, cancer in animals
- Radon: lung cancer
- Tobacco smoke: respiratory disease and lung cancer
- Wood stoves, gas range, or other heating devices: carbon monoxide, nitrogen dioxide, particulates, aerosols-respiratory symptoms, toxicity, death

Exposure in the Home and Environment

Aerosol sprays, Air fresheners, Automotive products, Candles (leaded wick), Cleansers, Disinfectants, Dry-cleaned clothing, Fuel, Hobby supplies, Moth repellents, Paint strippers and other solvents, Paints, Wood preservatives, Pesticides

- Pesticides: Dizziness, Headaches, Muscle twitching, Nausea, Tingling sensations, and Weakness
- Lead: Delays in physical and mental development, Increased behavioral problems, Lower IQ levels, and Shortened attention spans, Convulsions, Coma, and Death
- Toxic materials may be encountered in: Making stained glass and jewelry, Model building, Oil and airbrush painting, Soldering, and Woodworking
- Contaminated soil poses a risk of toxicity: Lead, Dioxin, Pesticides
- Contamination of drinking water supplies: Local land use practices (fertilizers, pesticides, concentrated feeding operations), Manufacturing, Naturally occurring chemicals and minerals, Wastewater releases

C&P Exposure History

Exposure History:

- Current and past exposure to metals, dust, fibers, fumes, chemicals, biologic hazards, radiation, noise, and/or vibration related to work, home and hobbies: REVIEW Audio (occupation, oncology), H&P, Pulmonology/Cardiology (past smoking), Mental Health (family hx, substance abuse, occupational hx, spousal hx-also smoker, deceased from XXX, worked as XXX)
- Typical workday (job tasks, location, materials, and agents used); REVIEW Mental Health, Specialist exams - Description of current and previous jobs including short-term, seasonal, and part-time employment and military service
- Other employees or household members similarly affected: REVIEW Mental Health
- Health and Safety Practices at Work Site: REVIEW Audio
- Medical and industrial hygiene surveillance: REVIEW past employment records, SSA records
- Personal protective equipment (e.g., respirators, gloves, and coveralls): REVIEW SSA records
- Personal habits (Smoke and/or eat in work area?), Wash hands with solvents, Shower before leaving work, Change shoes and/or clothing before leaving work?: REVIEW past employment records, SSA records

Environmental Health Resources

- ATSDR <http://www.atsdr.cdc.gov>
- CDC <http://www.cdc.gov>
- NIOSH <https://www.cdc.gov/niosh/index.htm>
- OSHA <http://www.osha.gov>
- EPA <http://www.epa.gov>
- Safety Data Sheets (SDS) (formally known as Material Safety Data Sheets (MSDS))
<https://www.osha.gov/Publications/OSHA3514.html>
- ACOEM <http://www.acoem.org>
- ACMT <http://www.acmt.net>
- ACPM <http://www.acpm.org>