HAZARDOUS AND TOXIC SUBSTANCES

The most successful toxic tort cases are generally found to involve asbestos (mesothelioma), benzene (acute myelogenous leukemia (“AML”), multiple myeloma, and non-Hodgkin’s lymphoma (“NHL”)), beryllium (chronic beryllium disease or “CBD”), and vinyl chloride (angiosarcoma of the liver). Claims involving most other hazardous and toxic substance, or other diseases, will lead to more difficult litigation, greater expense and greater risk of loss.

The federal government has identified a number of known human carcinogens and their target organs based upon epidemiological evidence (not just animal testing) and other human experience. While this may simplify the general causation issue (that this particular kind of exposure can cause this kind of disease) it does not resolve the issue of specific causation (that this person’s disease was caused by these exposures). Where there is no marker disease (such as mesothelioma, angiosarcoma, or CBD), the cases are much more difficult, expensive and risky.

Below I have listed various occupational carcinogens identified from a number of sources, including the NTP, ATSDR and IARC.

**U.S. Department of Health and Human Services**
**Public Health Service**
**National Toxicology Program**
**11th Report on Carcinogens**

**Known Human Carcinogens** ("There is sufficient evidence of carcinogenicity from studies in humans which indicates a causal relationship between exposure to the agent, substance or mixture and human cancer.")

**Arsenic**
pesticides, wood preservatives
skin, lung, digestive tract, liver, bladder, kidneys, lymphatic, hematopoietic systems

**Asbestos**
insulation
mesothelioma, respiratory tract (lung)

**Benzene**
solvent, gasoline, raw material
acute myelogenous leukemia, non-Hodgkin’s Lymphoma, possible multiple myeloma

**Benzidine**
production of dyes
bladder
**Beryllium**
metal and alloy
chronic beryllium disease, lung

**1,3 Butadiene**
polymer production
lymphatic/hematopoietic systems

**Cadmium**
paint, pigments, batteries
lung

**Chromium hexavalent**
corrosion inhibitor, pigments
lung

**Coal Tar/Pitches**
creosote, fuel, naphthalene
skin, scrotum, lung, bladder, skin, kidney, digestive tract

**Coke Oven Emissions**
blast furnaces
skin, bladder, respiratory tract (lung)

**Ethylene Oxide**
chemical production, fumigant, insecticide
lymphatic/hematopoietic

**Ionizing radiation**
nuclear power, medical, analysis (oil/gas formations, examine welds) leukemia, thyroid, breast, lung

**Mineral Oils**
lubricant base oil
scrotum, skin, gastrointestinal, sinonasal, bladder, lung, rectum, buccal cavity, pharynx

**2-Naphthylamine**
dyes, rubber antioxidant
bladder

**Nickel Compounds**
stainless steel, alloys, batteries, pigments, ceramics
lung, nasal

**Silica**
sandblasting, grinding, polishing, glass, ceramics
lung

**Soots**
byproduct, fertilizer
scrotum, skin, lung, prostate, bladder, lymphatic/hematopoietic

**Sulfuric Acid Mists**
generated in use sulfuric acid/trioxide/oleum
laryngeal, lung

2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD), dioxin
pesticide contaminant
lung, non-Hodgkin's lymphoma

**Vinyl chloride**
plastic production
angiosarcoma of liver

**Wood dust**
woodworking
nasal

**International Agency for Research on Cancer (IARC)**
**List of known carcinogens not included on NTP list**

**Benzo[a]pyrene**
Coal tar, asphalt, exhaust fumes
Lung, bladder, skin

**Formaldehyde**
Building materials
Lung, nasopharyngeal

**Methylenebis(chloroaniline)(MOCA)**
Polyurethane production
Liver, lung

**Agency for Toxic Substances and Disease Registry (ATSDR)**
**LIST OF KNOWN CARCINOGENIC AGENTS BY ORGAN**

**Bladder**
Arsenic
Benzidine
Cadmium
Tobacco

**Blood (leukemia/lymphoma)**
Benzene
Ionizing radiation
Vinyl chloride

**Brain**
Vinyl chloride

**Colon**
Arsenic

**Kidney**
Arsenic
Coke oven emissions

**Liver**
Alcohol
Vinyl chloride

**Lung**
Arsenic
Asbestos
Beryllium
Cadmium
Chromium hexavalent
Coke oven emissions
Tobacco
Uranium – radon
Vinyl chloride

**Mouth, pharynx, larynx, esophagus**
Alcohol
Tobacco

**Skin**
Arsenic
ADDITIONAL OCCUPATIONAL DISEASE RISKS

JOSPEH F. FRAUMENI, JR.
PERSONS AT HIGH RISK OF CANCER
OCCUPATIONAL CARCINOGENS

A. Organic Agents

1. Aromatic Hydrocarbons

Coal Soot       lung, larynx, skin
Coal Tar        scrotum, urinary bladder
Other products of coal combustion scrotum, urinary bladder

Petroleum       nasal cavity, larynx, skin, scrotum
Petroleum coke   lung, skin, scrotum
Wax             lung, skin, scrotum
Creosote        lung, skin, scrotum
Anthracene      lung, skin, scrotum
Paraffin        lung, skin, scrotum
Shale           lung, skin, scrotum
Mineral Oils    lung, skin, scrotum

Benzene         bone marrow (leukemia)

Auramine        urinary bladder
Benzidine       urinary bladder
a-naphthylamine urinary bladder
b-naphthylamine urinary bladder
magenta         urinary bladder
4-aminodiphenyl urinary bladder
4-nitrodiphenyl urinary bladder

2. Alkylating Agents

Mustard Gas     larynx, lung, trachea, bronchi

3. Others

Vinyl Chloride  liver angiosarcoma, brain
Bis(chloromethyl) ether lung (oat cell carcinoma)

Chloromethylle methyl ether lung (oat cell carcinoma)

B. Inorganic Agents
1. **Metals**

   **Arsenic**  skin, lung, liver

   **Chromium**  nasal cavity and sinuses, lung, larynx

   **Iron oxide**  lung, larynx

   **Nickel**  nasal sinuses, lung

2. **Fibers**

   **Asbestos**  lung, pleural and peritoneal mesothelioma

3. **Dusts**

   **Wood**  nasal cavity and sinuses

   **Leather**  nasal cavity and sinuses, urinary bladder

C. **Physical Agents**

1. **nonionizing radiation**

   **Ultraviolet rays**  skin

2. **Ionizing radiation**

   **Uranium**  skin, lung, bone, bone marrow (leukemia)

   **Radon**  skin, lung, bone, bone marrow (leukemia)

   **Radium**  skin, lung, bone, bone marrow (leukemia)

   **Mesothorium**  skin, lung, bone, bone marrow (leukemia)

3. **Other**

   **Hypoxia**  bone

**FRAUMENI OCCUPATIONAL CARCINOGENS BY SITE**

**Liver**  arsenic, vinyl chloride
Nasal cavity and sinuses  chromium, isopropyl oil, nickel, wood and leather dust

Lung  arsenic, asbestos, chromium, coal products, dusts, iron oxide, mustard gas, nickel, petroleum, ionizing radiation, bis(chloromethyl) ether

Bladder  coal products, aromatic amines

Bone  ionizing radiation

Bone marrow  benzene, ionizing radiation

Various state workers compensation statutes and/or regulations identify compensable occupational diseases.

Illinois NRS 617.453 indicates that the following substances shall be deemed ... to be known carcinogens that are reasonably associated with the following disabling cancers:

(a) diesel exhaust, formaldehyde and polycyclic aromatic hydrocarbon: bladder cancer; (b) acrylonitrile, formaldehyde and vinyl chloride: brain cancer; (c) diesel exhaust and formaldehyde: colon cancer; formaldehyde: hodgkin’s lymphoma; (e) formaldehyde and polycyclic aromatic hydrocarbon: kidney cancer; (f) chloroform, soot and vinyl chloride: liver cancer; (g) acrylonitrile, benzene, formaldehyde, polycyclic aromatic hydrocarbon, soot and vinyl chloride: lymphatic or haemotopoietic cancer; (h) diesel exhaust, soot, aldehydes and polycyclic aromatic hydrocarbon: basal cell carcinoma, squamous cell carcinoma and malignant melanoma; (i) acrylonitrile, benzene and formaldehyde: prostate cancer; (j) diesel exhaust, soot and polychlorinated biphenyls: testicular cancer; (k) diesel exhaust, benzene, x-ray radiation: thyroid cancer.

Illinois NRS 617.450 identifies specific occupational diseases:

Arsenic poisoning, brass or zinc poisoning, carbon monoxide poisoning, chrome ulceration of skin or nasal passages, epithelioma cancer or ulceration of skine or corneal surface due to carbon, pitch, tar or tarry compounds, lead poisoning, manganese dioxide poisoning, mercury poisoning, phosphorus poisoning, carbon disulfide poisoning, chlorine poisoning, poisoning by flour, burned grease, bakery and kitchen fumes, poisoning by gasoline, benzine, naphtha or other volatile petroleum products, wood alcohol poisoning, potassium cyanide poisoning, radium poisoning, and sulfur dioxide poisoning.

North Carolina Section 97-53 enumerates the occupational diseases recognized for workers compensation, These include poisoning from arsenic, brass, zinc, manganese, lead, mercury, phosphorous, carbon bisulfide, methanol, naphtha, volatile halogenated hydrocarbons, benzol or nitro and amido derivatives of benzol,
radium, carbon monoxide, sulphuric, hydrochloric or hydrofluoric acid and chrome ulceration, skin cancer or ulceration of skin or corneal surface due to tar pitch, bitumen, mineral oil, paraffin, and asbestosis, silicosis and psittacosis (from bird droppings).