Toxic Chemicals Released During Oil and Gas Operations

Pollutant/Known Negative Health Effects:

Arsenic
Chronic arsenic exposure can cause damage to blood vessels, a sensation of "pins and needles" in hands and feet, darkening and thickening of the skin, and skin redness. It is a known human carcinogen, and can cause cancer of the skin, lungs, bladder, liver, kidney, and prostate.

Hydrogen Sulfide
Hydrogen sulfide has been linked to irritation of the eyes, nose, and throat, difficulty in breathing, headaches, dizziness, nausea, and vomiting. Low-level exposure might also lead to poor attention span, poor memory, and impaired motor function.
Short-term exposure at high concentrations can lead to loss of consciousness and death.

Mercury
Mercury can permanently damage the brain, kidneys, and developing fetus and may result in tremors, changes in vision or hearing, and memory problems. Even in low doses, mercury may affect an infant's development, delaying walking and talking, shortening attention span and causing learning disabilities.

Polycyclic Aromatic Hydrocarbons
Several of the polycyclic aromatic hydrocarbons (PAHs) that can be found in crude oil have caused tumors in laboratory animals and are considered possible or probable human carcinogens. Studies of people have found that individuals exposed for long periods to mixtures that contain PAHs can also develop cancer. In addition, animal tests have found reproductive problems and birth defects.

Volatile Organic Compounds (VOCs):

Acetone
Acetone can cause nose, throat, lung, and eye irritation, headaches, lightheadedness, and confusion. In animals it has been linked to kidney, liver, and nerve damage, and increased birth defects.

Benzene
Benzene is a known human carcinogen and causes leukemia.

Ethylbenzene
Ethylbenzene can cause dizziness, throat and eye irritation, respiratory problems, fatigue and headaches. It has been linked to tumors and birth defects in animals, as well as to damage in the nervous system, liver, and kidneys.

Toluene
Toluene can cause fatigue, confusion, weakness, memory loss, nausea, hearing loss, central nervous system damage, and may cause kidney damage. It is also known to cause birth defects and reproductive harm.*

Xylene
Xylene can cause headaches, dizziness, confusion, balance changes, irritation of the skin, eyes, nose, and throat, breathing difficulty, memory difficulties, stomach discomfort, and possibly changes in the liver and kidneys.

Radioactive Substances:

Radium
Radium is a known human carcinogen, causing bone, liver, and breast cancer.

Radon
Radon can cause an increased incidence of lung diseases such as emphysema, as well as lung cancer.

* State of California **Environmental Protection Agency**, "**Chemicals known to the state to cause cancer or reproductive toxicity**," (1 June 2007), available at: **http://www.oehha.ca.gov/prop65/prop65_list/Newlist.html**

SOURCES:
National Library of Medicine, Hazardous Substances Data Bank (HSDB), **http://toxnet.nlm.nih.gov**
U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), **http://www.atsdr.cdc.gov/toxfaq.html**
U.S. Department of Energy, Office of Environmental Management, Risk Assessment Information System (RAIS),
Toxicity Profiles, **http://rais.ornl.gov/tox/rap_toxp.shtml**
U.S. Department of Labor, Occupational Safety and Health Administration Guidelines,
http://www.osha.gov/SLTC/healthguidelines

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Formaldehyde: http://www.cancer.gov/cancertopics/factsheet/Risk/formaldehyde

" … 4. **Can formaldehyde cause cancer?**

… In 2011, the National Toxicology Program, an interagency program of the Department of Health and Human Services, named **formaldehyde as a known human carcinogen** in its 12th Report on Carcinogens (3). … "