

Volatile Organic Compounds and Your Health

Some people in the Gulf have had their blood tested for volatile organic compounds (VOCs) because they were worried about exposure to chemicals after the Gulf oil spill. CDC and ATSDR are working with Gulf residents and their doctors to help them understand what the results might mean.

The Gulf oil spill had a major impact on the environment and communities. Concerns about health are understandable. CDC and state health departments tracked health effects after the spill. Some people reported short-term symptoms like throat or eye irritation, headaches, or coughs. In similar situations in other communities, people have also experienced stress or anxiety.

About VOCs

Organic compounds are chemicals that contain carbon and are found in all living things. Volatile organic compounds, or VOCs, are organic compounds that easily become vapors or gases. Volatile compounds are often known for giving things their 'smell'. VOCs are released from burning fuel, such as gasoline, wood, coal, or natural gas. They are also released from paint, glue, and other products used at home or work. Some examples of VOCs that are found in crude oil and petroleum products like gasoline are benzene, toluene, ethylbenzene and xylenes.

After the oil spill, environmental agencies sampled the air for these VOCs. They found some VOCs in the air. But the levels that were found were very low and are not likely to result in any increase in cancer risk or long term health effects.

VOCs are part of our daily lives

VOCs are very common. You can come into contact with VOCs in many ways, including:

- Pumping gasoline
- Working around burning fuel such as gas, wood, coal, or natural gas
- Breathing in paint thinners, pesticides, degreasers, or some scented candles
- Smoking cigarettes or breathing secondhand smoke
- Living near refineries, other industries, or highways

Health effects of VOCs

Most people can be around low levels of VOCs without feeling health effects.

Health effects depend on the type of VOC a person is exposed to, how long they were exposed, and how much they were exposed to. At higher levels over a long time, some VOCs can cause long-term health effects, especially to your brain, blood, or liver. Some VOCs may increase your chance of getting certain types of cancer. A person who is exposed for a short time to very high levels could feel dizzy, sleepy, or confused.

Questions about long-term health effects from low levels of exposure are very important. We are always trying to add to our knowledge about low levels of exposures and possible health effects.

VOC levels tested in air after the oil spill were well below levels related to long-term health effects. We do not know everything about low-level exposures. However, based on what we know, the likelihood of long-term health effects, including cancer, is very low.



Protecting yourself from VOCs

To limit exposure, you can:

- Use products that contain VOCs in open areas, so that the gases can evaporate into the air.
- Avoid direct contact with VOC products, oil, or sludge.
- If products containing VOCs are spilled on the skin, wash well with soap and water.
- Avoid smoking and avoid breathing secondhand smoke.

About blood tests for VOCs

Detection of VOCs in blood is common but test results only reflect very recent exposures. Detection means that someone has been exposed, but it does not mean a person will have health effects from the VOCs.

CDC and ATSDR do not recommend testing your blood for VOCs. Laboratory testing for VOCs is extremely difficult and does not always give useful results.

- These chemicals only stay in the blood a short time therefore test results only reflect very recent exposures (within hours or days of testing).
- Lab tests for VOCs will not help your doctor manage your health issues.
- Lab tests cannot always tell the source of the VOC exposure, for example whether the exposure is from smoking or from oil.
- The labs must handle and store test tubes very carefully or the results will not be accurate.
- The lab must be able to detect the chemical at very small amounts – parts per trillion. Many labs do not have the ability to test for these extremely low levels accurately.

If a person has had VOC testing and is concerned about the results, he or she should discuss the results with the doctor who ordered the results.

Where to find more information

Other good sources of accurate information about VOCs in general and the Gulf Oil Spill are

- Regional Poison Control Centers in Alabama, Florida, Louisiana, Mississippi, and Texas. To reach your nearest Poison Control Center, call 1-800-222-1222.
- State health departments.
- Association of Occupational and Environmental Clinics: <http://www.aoec.org/about.htm>
- Pediatric Environmental Health Specialty Units (<http://aoec.org/PEHSU/index.html>). These are in several university hospitals. Doctors can provide information about potential exposure to children. These units are supported by ATSDR and EPA.
- NIH Gulf health study: <http://www.niehs.nih.gov/about/od/programs/gulfspill/gulfstudy/index.cfm>

To learn more about volatile organic compounds:

Benzene: <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=38&tid=14>

Toluene: <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=160&tid=29>

Ethylbenzene: <http://www.atsdr.cdc.gov/toxfaqs/TF.asp?id=382&tid=66>

Xylene: <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=295&tid=53>

Hexane: <http://www.atsdr.cdc.gov/toxfaqs/TF.asp?id=392&tid=68>

To learn more about the oil spill and your health

Light crude oil: http://emergency.cdc.gov/gulfoilspill2010/light_crude_residents.asp

How to Protect Your Health: http://emergency.cdc.gov/gulfoilspill2010/what_to_expect.asp