



Every day, Clark Seif Clark professionals are deployed across the nation helping both large and small customers resolve health & safety, industrial hygiene, environmental and indoor air quality issues.

At a moment's notice, Clark Seif Clark can send their experts anywhere they are needed. No matter if it's in response to a hurricane, wildfire, flood, tornado, or other natural disaster, Clark Seif Clark is ready to help and can respond in no time at all.

## TCE Exposure Risks Due to Vapor Intrusion & Other Pathways

Vapor intrusion occurs when there is a migration of volatile chemicals from contaminated groundwater or soil into an overlying building. Volatile chemicals emit vapors that migrate through subsurface soils and into indoor air spaces that can cause exposure concerns for the building's occupants.

One common chemical pollutant that routinely causes vapor intrusion concerns is the presence of trichloroethylene or TCE. TCE is a nonflammable, colorless liquid with a somewhat sweet odor. It is a type of volatile organic compound (VOC) that has been used mainly as a solvent to remove grease from metal parts and has also been used in some adhesives, paint removers and as a spot remover in the dry cleaning industry. It can be released into the air, water and soil at places where it was produced, used or disposed of. Because it breaks down slowly in soil or water, it is still found in underground water sources in areas where it was used in the past and improperly handled or discarded.

According to the Agency for Toxic Substances & Disease Registry (ATSDR), "Exposure to moderate amounts of trichloroethylene may cause headaches, dizziness, and sleepiness; large amounts may cause coma and even death. Eating or breathing high levels of

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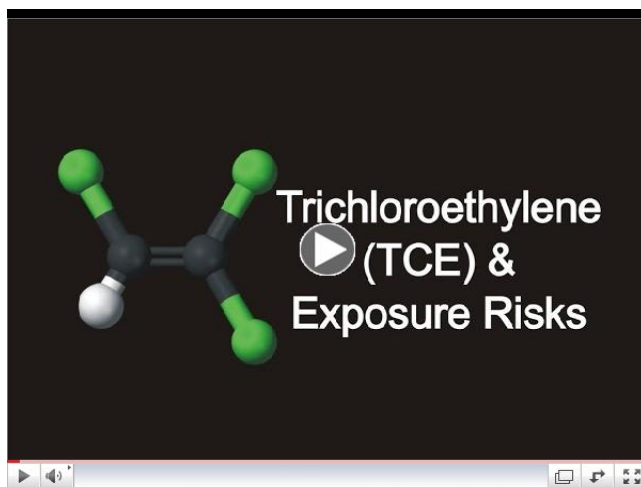
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trichloroethylene may damage some of the nerves in the face. Exposure to high levels can also result in changes in the rhythm of the heartbeat, liver damage, and evidence of kidney damage. Skin contact with concentrated solutions of trichloroethylene can cause skin rashes."

"TCE contaminated vapor can enter a structure by migrating through contaminated soil or groundwater through cracks in the foundation; from contaminated bath, shower and drinking water; living in proximity to sites where TCE is produced or waste sites containing the chemical; and by using trichloroethylene-containing products such as stains and varnishes, adhesives, paint removers and cleaners," said David Broadbent, Technical Director of Clark Seif Clark. "At CSC, our environmental consultants can identify TCE and a wide range of other chemical contaminants that may be present in residential and commercial buildings to help prevent exposure risks."

CSC recently sponsored an educational video about TCE and exposure risks that can be seen at:



Trichloroethylene (TCE) & Exposure Risks

To learn more about this or other environmental, health and safety services, please visit [www.csceng.com](http://www.csceng.com), email [csc@csceng.com](mailto:csc@csceng.com) or call (800) 807-1118.

## Environmental Professionals Share Information about Lead Poisoning Risks at Shooting Ranges

There are an estimated 9,000 non-military outdoor firing ranges and approximately 16,000 to 18,000 indoor ranges operating in the United States according to the National Institute for Occupational Safety and Health (NIOSH). The U.S. military alone operates more than 3,000 indoor firing ranges.

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**Is It Safe?**

Millions of law enforcement officers, soldiers and gun enthusiasts regularly visit shooting ranges and the facilities employ tens of thousands of workers. Each year, millions of pounds of lead from bullets are fired at shooting ranges and both outdoor and indoor ranges can be contaminated with high levels of lead and lead dusts.

Despite the natural ventilation of outdoor firing ranges, personal breathing zone lead levels can exceed the NIOSH recommended exposure limit (REL) and the Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL). Indoor ranges have additional challenges and NIOSH states that, "Ventilation is the most important engineering control for protection against primary lead exposure in indoor firing ranges."

"The use of lead bullets at shooting ranges can cause exposure risks to this heavy metal for both the people that visit these facilities and those who work there," said Franco Seif, President of Clark Seif Clark. "Employees of these facilities are often at greatest risk and even basic tasks like cleaning and maintenance work should be performed by workers that have been trained in the proper techniques of exposure control and personal protective equipment (PPE). At CSC, our environmental and building science professionals provide lead consulting and testing services at shooting ranges to help ensure that workers and people that utilize these facilities are not being exposed to high levels of lead and lead dusts."

CSC recently sponsored an educational video about lead exposure risks and shooting ranges that can be seen at:



Lead Exposure Risks & Shooting Ranges

To learn more about lead, ventilation, indoor air quality, environmental, health and safety services, please visit [www.csceng.com](http://www.csceng.com), email [csc@csceng.com](mailto:csc@csceng.com) or call (800) 807-1118.

**About Clark Seif Clark:** CSC was established in 1989 to help clients in both the public and private sectors address environmental issues. CSC is a leading provider of these services with multiple offices along the western seaboard and southwest. The company believes in science-based protocols and has a strong background in engineering making them the preferred environmental consultants to healthcare facilities, architects, schools, builders, contractors, developers and real estate professionals.