



Evaluation of Public Health Implications of Indoor Air Exposures to Volatile Organic Compounds Related to Former EZ cleaners

June 2013

The primary purpose of this health consultation is to evaluate the potential health hazards associated with current and future indoor air exposures as a result of vapor intrusion from a groundwater plume stemming from the former EZ Cleaners located in Aurora, Colorado (referred to as "*site-related chemicals*") and, if so, make recommendations to protect public health. It is, however, important to note that this health consultation has also conservatively evaluated exposures related to chemicals found in indoor air which are not related to the former EZ cleaners, and are referred to as "*non site-related chemicals*". It should be noted that non site-related chemicals have been evaluated from the public health perspective only. Furthermore, the determination of sources of non site-related chemicals is beyond the scope of this health consultation and is also beyond the scope of CDPHE's regulatory role.

Site Background

EZ Cleaners is a former dry cleaning facility that operated at tenant space 2350 A and 2350 B of the Country Square Shopping Center from approximately 1989 until 2005. Tetrachloroethene (PCE) was detected in groundwater in 2006 during an environmental assessment that occurred during a change in ownership of the property. The contaminated groundwater plume stretches approximately 1,100 ft. in a northeasterly direction and underlies nearby residential and work places (church, apartments, and townhomes).

Domestic groundwater wells are not present in the contaminated groundwater plume under consideration in this evaluation. Therefore, the primary exposure pathway of concern is inhalation of volatile organic compounds (VOCs) that have migrated from the groundwater into the indoor air space of overlying buildings via vapor intrusion.

What did CCPEHA find in the Health Consultation?

CCPEHA has reached one conclusion regarding exposure to site-related indoor air contaminants and four conclusions regarding exposure to non site-related COPCs in buildings at the former EZ Cleaners site:

- **Conclusion for site-related COPCs (i.e., related to dry-cleaning industry)**
 - *Exposure to site-related contaminants in indoor air is not likely to harm the health of current or future workers, church members, or residents of nearby Townhomes and apartments at the EZ Cleaners site.* This conclusion was reached because the estimated exposure levels of PCE, which is the only compound detected in indoor air at the Church that is related with the dry cleaning industry, is associated with a very low increased risk of developing non-cancer and cancer health effects. The estimated cancer and non-cancer risks for PCE are well below EPA's acceptable levels. In addition, for TCE (a non-detected COPC) at all locations, the estimated non-cancer hazards at the conservative assumption of using the maximum reporting/detection limit, are at or below the acceptable level of one and the estimated cancer risks are below or slightly above the low end of EPA's acceptable cancer risk range of 1 in a million to 100 in a million.

- Conclusions for non site-related COPCs (i.e., not related to dry-cleaning industry)

- *It cannot currently be determined if breathing non site-related COPCs (1,4-dichlorobenzene, ethyl benzene, chloroform, methylene chloride; 1,2,4-trichlorobenzene; and 1,3-butadiene) in indoor air at the Hearthstone Townhomes could harm people's health.* This conclusion was reached because it is difficult to determine the current and future exposures to 1,4-dichlorobenzene. In addition, the current concentration of 1,4-dichlorobenzene in one unit of the Townhomes is unknown. However, the limited available information indicates a low increased risk of developing cancer and non-cancer health effects, based on the most recent sampling event in one Townhome.
- *Residential exposure to non site-related indoor air COPCs (Ethyl benzene, chloromethane, 1,4-dichlorobenzene, benzene, chloroform; 1,2,4-trichlorobenzene and 1,3-butadiene) at the Cambrian Apartments is not likely to harm the health of current and future residents.* This conclusion was reached because the estimated non-cancer health hazards and theoretical cancer risks are associated with a low increased risk of developing cancer and non-cancer health effects. Specifically, the estimated cumulative non-cancer health hazard is at the acceptable level of one for all detected compounds and the estimated cumulative theoretical cancer risk for all carcinogenic compounds is within the EPA acceptable cancer risk range.
- *Exposure to non site-related indoor air contaminants (benzene, methylene chloride, 1,4-dichlorobenzene, ethyl benzene, chloroform, 1,2,4-trichlorobenzene; and 1,3-butadiene) at All Saints Lutheran Church is not likely to harm the health of current or future church members' or workers' health.* This conclusion was reached because the estimated non-cancer health hazards and theoretical cancer risks are associated with a low increased risk of developing cancer and non-cancer health effects. Specifically, the estimated cumulative non-cancer hazard is below the acceptable level of one and the estimated cumulative theoretical cancer risk is well within the EPA acceptable cancer risk range.
- *Occupational exposure to non site-related indoor air COPCs (ethyl benzene, benzene, 1,4-dichlorobenzene, 1,2,4-trichlorobenzene and 1,3-butadiene) at the source area (former EZ Cleaners Unit and adjacent units) is not likely to harm the health of current or future workers.* This conclusion was reached because the estimated non-cancer health hazards and theoretical cancer risks are associated with a low increased risk of developing non-cancer and cancer health effects. Specifically, the estimated cumulative non-cancer hazard is below the acceptable level of one and the estimated cumulative cancer risk is well within the EPA acceptable cancer risk range.

What's next?

- CCPEHA will evaluate any new indoor air data upon request
- CCPEHA will provide health education materials upon request

FREQUENTLY ASKED QUESTIONS:

What is a health consultation? A health consultation provides advice on a specific public health issue related to real or possible human exposure to toxic material. A Health Consultation is a way for the Colorado Department of Public Health and Environment to respond quickly to a need for health information on toxic substances and to make recommendations for actions to protect the public's health. Health Consultations may consider:

1. The levels (or "concentrations") of hazardous substances;
2. If and how people might be exposed to contamination (through "exposure pathways" such as breathing air, drinking or contacting water, contacting or eating soil, or eating food);
3. The harm the substances might cause to people (or the contaminants' "toxicity");
4. If and how working or living nearby might affect people's health; and
5. Other dangers to people, such as unsafe buildings, explosive hazards, or other physical hazards.

Where can I find this health consultation?

An electronic copy of this health consultation can be found at:

<http://www.cdphe.state.co.us/dc/envtox/ccpehasites.html>

To request a free copy of this health consultation or for more information about the health consultation, please feel free to contact Thomas Simmons, Health Assessor, at 303-692-2961. For other site-related concerns, please call Colleen Brisnehan, Project Manager, at 303-692-3357.