Important Information on
Trichloroethylene (TCE) in Workplace Indoor Air

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The purpose of this fact sheet is to provide information on TCE workplace exposures due to hazardous waste sites as the source of contamination and worker exposure. This information applies to workplaces that do not utilize TCE as part of its operations. OSHA standards cover workplaces that utilize TCE as part of its operations.

Why am I receiving this notice?

You are receiving this information because TCE has been measured in the air in your workplace at a level which exceeds MassDEP's "Imminent Hazard" concentration. An Imminent Hazard means that immediate action must be taken to reduce the exposure at the site because short-term exposure (five years or less) poses a risk of harm to human health.

- A TCE concentration above 24 micrograms per cubic meter ($\mu g/m^3$) in a typical workplace is identified as an Imminent Hazard for women who are or may be in the first 8 weeks of pregnancy, to ensure that measures are taken promptly to reduce the risk to the developing fetus. Developmental effects will not necessarily occur at exposures above this level, but they cannot be ruled out and steps to address the potential risk are required.
- A TCE concentration above 80 $\mu g/m^3$ is identified as an Imminent Hazard for everyone based on potential effects on the immune system from short-term (5 years or less) exposures. Immune system effects will not necessarily occur at exposures above this level, but they cannot be ruled out.

What is TCE? How might I be exposed?

TCE is a man-made, colorless liquid used mainly as a solvent to remove grease from metal parts. It has also been an ingredient in some consumer products such as glues and paint removers. When TCE is released to soil or groundwater as a result of spills or leaks at a facility, it can evaporate and enter into a building's indoor air through seams and cracks in building foundations. This process is called "vapor intrusion."

What is the safe level of TCE in the workplace?

The indoor air guideline for workplace settings is 8 $\mu g/m^3$. This value is based on the United States Environmental Protection Agency's (EPA's) guideline for continuous exposure, which has been adopted by MassDEP and adjusted for typical work hours. The value is based on a cautious interpretation of the data. At or below this level, there is no significant risk of health effects.

What are the possible health effects from indoor air TCE exposure?

The possible health effects from breathing TCE depend on the levels in indoor air, the length of exposure, and whether and when a pregnant woman is exposed. Women who are in the first 8 weeks of pregnancy are most sensitive to TCE exposures. TCE exposures may increase the risk of heart malformations in the developing fetus. Breathing TCE over a long period of time may affect the immune system and increase susceptibility to infections. Long-term exposures may increase an individual's risk of cancers of the kidney, liver and non-Hodgkin's lymphoma.

What should I know if I might be pregnant?

Because TCE exposure during the first 8 weeks of pregnancy could affect fetal heart development, pregnant women are of special concern. Where workplace indoor air TCE concentrations exceed 24 $\mu g/m^3$, MassDEP

requires immediate notification to workers and action to reduce concentrations to below 24 µg/m^3, or if feasible, eliminate the exposures.

For exposures during the first 8 weeks of pregnancy, MassDEP recommends the following protective measures:

- At TCE levels above 24 µg/m^3, women who may be in the first 8 weeks of pregnancy and are concerned about their risk may want to consult with their physician and/or an occupational doctor familiar with chemical exposures. Depending on the specific situation, there may be ways to minimize or eliminate the risk, for example by avoiding areas of the workplace with higher TCE levels if possible. TCE levels above 8 µg/m^3 and below 24 µg/m^3 present a low risk to the pregnant woman, but levels in this range must ultimately be reduced to meet EPA and MassDEP's indoor air guidelines.
- Levels above 60 µg/m^3 are of sufficient concern that MassDEP recommends that women who think they may be in the first 8 weeks of pregnancy consider taking immediate steps to reduce or eliminate exposure while mitigation measures are underway. For example, it may be possible to avoid areas of the workplace that have TCE levels above 60 µg/m^3 or temporarily relocate to a workspace with lower levels of TCE.

For exposures before or after the first eight weeks of pregnancy:

- Exposures that occurred two weeks or more before pregnancy do not contribute to risk since most TCE is eliminated from the body within several days.
- After the first 8 weeks of pregnancy, TCE does not present a risk to the developing fetal heart because it is fully formed, so the precautions suggested above would no longer be needed.

What measures might be taken to reduce TCE levels in my workplace?

Parties responsible for the contamination are required to contract environmental professionals to quickly take steps to reduce the indoor air levels. The first mitigation steps usually include sealing sumps and foundation cracks and increasing ventilation. Portable carbon filtration systems and changes to the heating and ventilation system may also help to temporarily reduce concentrations while more permanent measures are being designed and implemented. Installing a sub-slab depressurization (SSD) system can be an effective measure in the longer term. An SSD system, which is basically a radon abatement system, is a series of pipes under the basement with a fan that vents vapors to the outdoors. Groundwater treatment or soil vapor extraction may also be employed to reduce the source of TCE contamination.

What should I do if I'm concerned that my health has been affected?

If you have concerns about your health status, you should talk to your family doctor and/or an occupational doctor familiar with chemical exposures (see http://www.aoec.org/content/directory_MA.htm). When you meet with them, provide a copy of your TCE sampling results and this factsheet.

Where can my physician and I get more information about potential health effects?

More information on TCE health effects and the basis of the MassDEP guidance values can be found in "US EPA Trichloroethylene Toxicity Values and Office of Research and Standards Recommendations Regarding Remediation Targets and Timeframes to Address Potential Developmental Risks"and other information on MassDEP's website at http://www.mass.gov/eea/agencies/massdep/toxics/sources/chemical-research-and-standards.html.

Where can I get more information on TCE contamination and cleanup?

More information on MassDEP guidance for sites with TCE contamination can be found at http://www.mass.gov/eea/agencies/massdep/toxics/sources/chemical-research-and-standards.html or by contacting Paul Locke at MassDEP.