

The toxicity of PCE as it affects vapor intrusion: an overview (July 2003)
By EnviroGroup Limited

EPA has classified PCE as a Group B2/C human carcinogen. This means that EPA considers PCE to be a probable human carcinogen on the basis of sufficient evidence of carcinogenicity in animals and inadequate evidence in humans. EPA's Integrated Risk Information System (IRIS), however, does not include any quantitative estimate of carcinogenic risk from inhalation exposure for PCE. This means that EPA has not formally adopted a peer reviewed inhalation unit risk factor to be used in calculating cancer risks from PCE. IRIS does include an oral reference dose for non-cancer effects, but does not include a reference concentration for chronic inhalation exposure for non-cancer effects.

In the late 1980's EPA developed an inhalation unit risk number for PCE of $5.8 \times 10^{-7} \text{ (ug/m}^3\text{)}^{-1}$. It is unclear whether this number was ever entered into IRIS, but it was widely used by EPA in risk assessments. The EPA carcinogen assessment for PCE has been ongoing for some time and is still currently under review. An initial draft re-assessment has been circulated within the agency for internal review. An external peer review will be scheduled at some time in the future.

EPA's National Center for Environmental Assessment (NCEA), a part of the Office of Research and Development, has over time issued provisional inhalation "unit risk" factors for PCE to be used for specific risk assessments on Superfund sites. The latest provisional number issued appears to be $3.0 \times 10^{-6} \text{ (ug/m}^3\text{)}^{-1}$. A unit risk factor is the concentration calculated to result in a 10^{-6} excess cancer risk under default exposure assumptions.

EPA Region 9 has set a Preliminary Remediation Goal for PCE for the inhalation pathway, known as an inhalation slope factor, of $1 \times 10^{-2} \text{ (mg/kg-d)}^{-1}$ based on the provisional information from NCEA. This number, when converted to an inhalation unit risk factor utilizing an inhalation rate of 20 m^3 per day, a 70 kg body weight, and 24-hour exposure, is the same as the NCEA provisional value.

The EPA draft Vapor Intrusion Guidance uses for PCE a unit risk factor of $3.0 \times 10^{-6} \text{ (ug/m}^3\text{)}^{-1}$ based on the NCEA provisional value.

The State of California (Office of Environmental Health Hazard Assessment) has listed PCE as a carcinogen. It has developed an inhalation potency factor that has been used as a basis for regulatory action in California since 1994 of $5.9 \times 10^{-6} \text{ (ug/m}^3\text{)}^{-1}$.

EPA Region 3 has set an inhalation slope factor of $2.0 \times 10^{-2} \text{ (mg/kg-d)}^{-1}$ based on the state of California number.

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