

April 22, 2015

Ligia Mora-Applegate
Office of District and Business Support
Division of Waste Management
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Irrigation water risk-based guidance levels for trichloroethene

Dear Ms. Mora-Applegate:

At your request we calculated irrigation water guidance levels for trichloroethene (TCE) that are protective of human health under an irrigation scenario (IWGLs). We previously calculated IWGLs for TCE in a letter to you dated March 2, 2009. The 2009 calculation used the cancer toxicity values listed in the *Technical Report: Development of Cleanup Target Levels (CTLs) for Chapter 62-777, FAC* (Feb, 2005) including an oral slope factor of $1.1E-02 \text{ mg/kg-d}^{-1}$ and an inhalation slope factor of $6.0E-03 \text{ mg/kg-d}^{-1}$. In 2011, the US EPA updated their toxicity values for TCE. Currently, the Integrated Risk Information System (IRIS) lists an oral slope factor of $4.6E-02 \text{ mg/kg-d}^{-1}$ and an inhalation unit risk of $4.1E-06 \text{ } \mu\text{g/m}^3$, both for kidney cancer. We also calculated an IWGL for TCE protective of the unborn fetus using the IRIS recommended chronic oral reference dose of $5E-04 \text{ mg/kg-d}$ and an inhalation dose of $2E-03 \text{ mg/m}^3$ (both protective of fetal heart malformations). In the irrigation scenario, receptors are exposed to contaminated groundwater outdoors while irrigating lawns, ornamental beds, and vegetable crops. From this scenario, separate guidance levels were developed based upon: 1) exposure for residents using contaminated water for lawn and ornamental bed irrigation, including exposure from recreational use of the lawn sprinklers by children; 2) exposure for landscape maintenance workers using contaminated water for the irrigation of lawns and ornamental beds at commercial facilities; and 3) exposure for residents who use contaminated water to grow fruit and vegetables for personal consumption.

IWGLs for these chemicals are listed in Table 1. A description of the methodology used for the calculation of these IWGLs was provided in a letter dated January 14, 2009. For watering of lawns and ornamentals in a residential setting, the IWGLs are: $750 \text{ } \mu\text{g/L}$, protective of kidney cancer and $1,400 \text{ } \mu\text{g/L}$, protective of the fetus. In an industrial setting, where the exposed individual might be a landscape maintenance worker, the IWGLs are somewhat higher: $1,800 \text{ } \mu\text{g/L}$, protective of kidney cancer and $8,800 \text{ } \mu\text{g/L}$, protective of the fetus. Using the Briggs model, the homegrown produce IWGLs are: $26 \text{ } \mu\text{g/L}$, protective of kidney cancer and $350 \text{ } \mu\text{g/L}$, protective of the fetus.

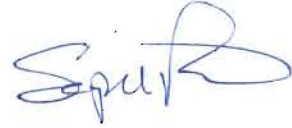
Due to the change in toxicity values, these numbers are lower than the IWGLs for TCE calculated in 2009. We recommend using the updated IWGLs for TCE at this site. In the case of TCE, the most sensitive endpoint is cancer. Therefore, IWGLs protective of cancer will also be protective of the fetus.

Please let us know if you have any questions regarding these calculations.

Sincerely,



Leah D. Stuchal, Ph.D.



Stephen M. Roberts, Ph.D.

Table 1 – Irrigation water risk-based guidance levels for trichloroethene

Endpoint Protected	Residential (µg/L)	Industrial (µg/L)	Produce (µg/L)
Kidney cancer	750	1,800	26
Fetal heart malformations	1,400	8,800	350