

**Contaminated Media Forum Meeting:
Age Dependent Adjustment Factors
Tallahassee, Florida, January 20, 2016**

1. The purpose of this meeting was to review the proposed addition of age dependent adjustment factor (ADAFs) to soil and groundwater cleanup target levels (SCTLs and GCTLs, respectively) for mutagenic carcinogens. This addition was proposed at the July 22, 2015 Contaminated Media Forum (CMF) and was also discussed at the November 3, 2015 CMF.
2. Keith Tolson gave a presentation which introduced ADAFs, provided the scientific evidence from United States Environmental Protection Agency (USEPA) for applying ADAFs to CTL equations for mutagenic carcinogens, gave the USEPA equations for incorporating ADAFs, and presented several potential options for Florida Department of Environmental Protection (FDEP) to consider with regards to including ADAFs.
 - a. As testing for toxicity usually begins in the adult life stage, there is an inconsistency between the way animals are being exposed in the lab and the way risk is calculated for humans exposed to chemicals in the environment, which begins at the age of one. After comparing animal exposures at early life stages and adult life stages, USEPA found that children were usually more sensitive to mutagenic carcinogens than were adults. USEPA accounts for this by applying an ADAF to mutagens (a factor of 10 for ages 0-2, 3 for ages 2-16, and 1 for ages 16+). The USEPA regional screening levels (RSLs) are currently calculated using ADAFs for mutagens.
 - b. If Florida were to adopt ADAFs, they would need to be incorporated into CTL equations. For carcinogens, Florida currently uses an aggregate resident scenario for soil exposures (where exposure assumptions are age weighted for child and adult) and an adult scenario for groundwater exposures. The USEPA equations use separate exposure equations for children and adults, which presents an issue for directly incorporating the ADAF, particularly with body weight.
 - c. Four options were presented for the Chapter 62-777, FAC rule update:
 - i. Adopt EPA equations for all carcinogens, which would move away from Florida's current age weighting. This approach would be easy to implement. However this would impact the CTL calculations for all carcinogens.

- ii. Use EPA age grouping for mutagenic carcinogens only, retaining Florida's current CTL equation for non-mutagens. This option presents technical inconsistencies with the way CTLs are calculated for non-mutagens and mutagens.
 - iii. Use ADAFs only for specific compounds with data support. This option would be complicated to undertake, as the identification of quality data to support the use of ADAFs would be time consuming. Calculation inconsistencies would remain, as stated above. In addition, this option could potentially leave out mutagens that may have serious early life stage effects but for which little to no data has yet been presented.
 - iv. Don't use ADAF. This option would allow Florida to retain its CTL calculations based on age weighting, however it ignores the potential effects mutagens may have on exposure during early life stages.
- d. Commentary on the presentation followed.
 - i. The University of Florida suggested a fifth option, where FDEP equations were kept and the ADAF was applied to the equations using an age-weighted ADAF (which would be 2.4 for ages 1-27).
 - ii. A suggestion was made to postpone adoption of an ADAF until more information is known about each mutagen and its potency during early life stages. This option ignores what is already known about mutagens. Additionally, ADAFs have been routinely used by the USEPA at Superfund sites since 2009. The majority of states have also adopted the use of ADAFs.
- e. The meeting concluded with the proposal of three action items to address several issues associated with the adoption of ADAFs. The action items include:
 - i. Review the list of current mutagenic chemicals and evaluate evidence for early life susceptibility.
 - ii. The University of Florida will re-examine how states use an ADAF to calculate their health-based risk levels. They will determine whether these states use the USEPA equations or have developed their own and whether the health-based risk levels are screening or cleanup levels.

- iii. Further analyze ways to incorporate the ADAF into the FDEP equation.
- f. A follow-up meeting will be scheduled in the next two months to assess the results from the action items.