The American Cleaning Institute (ACI) has been a leader in research and stewardship related to the environmental utility of surfactants used in cleaning products. As part of our efforts to promote sustainable use of surfactants in down-the-drain products, ACI has compiled the findings of research on the use, disposal, treatment, and aquatic risks of major surfactants in North American freshwater environments.

TABLE 1

Environmental Fate Properties of Surfactants. The major surfactants used in North America are classified as having rapid primary and ultimate biodegradability. Surfactants with a high surfactant concentration increase with chain length.

TABLE 2

Summary of ecoxicity data for major surfactants normalized to the average structure measured from monitoring of municipal wastewater treatment plant (WWTP) effluent. (2) Toxicity studies are used as input for the model experimental stream. Panel (Figure 3) shows observed concentration range (i.e., NoEC) with similar structures.

TABLE 3

Input parameters used in iSTREEM for predicting exposure concentrations. (1) SRI (2009); (2) McAvoy et al. (1993); (3) Trehy et al. (1996); (4) McAvoy et al. (1998); (5) Rapaport and Eckhoff (1990); (6) McAvoy et al. (2006); (7) McAvoy et al. (2006); (8) Federle and Schwab (unpublished data).

TABLE 4

Parameters used in iSTREEM for predicting exposure concentrations. (1) SRI (2009); (2) McAvoy et al. (1993); (3) Trehy et al. (1996); (4) McAvoy et al. (1998); (5) Rapaport and Eckhoff (1990); (6) McAvoy et al. (2006); (7) McAvoy et al. (2006); (8) Federle and Schwab (unpublished data).

TABLE 5

Task Units (TU) for surface and pore waters for a worst-case scenario (Trinity River, Texas, USA) (Figure 1). Dilution of effluent dominated. TU represent the ratios of measured surfactant constituent concentrations to the PEC. The methodology developed for assessing surfactant mixtures can be found on the ACI website. (2) Average values with multiple references are the weighted average removals from all of the studies.

CONCLUSIONS

Both prospective and retrospective studies show that the environmental risks of these large-volume chemicals found in products widely dispersed across North America are LOW.

REFERENCES

All references cited in this poster can be found at www.ACS.org.