

STUDENT PRESENTATION AT THE NCUR 2009

Eco-pharmacology of Sedatives

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Various pharmaceuticals end up in the environment, including our drinking water, where they may persist for years. This unintended exposure may be harmful to the living systems, including humans. Only very recently this problem has been addressed in a systematic way. However, we still do not know how these pharmaceuticals react with other chemicals in our environment, under the influence of the ultraviolet light or under the acidic or basic conditions in the water systems or soil, and under the catalysis of various clays. An additional problem is that the decomposition products of the pharmaceuticals may themselves be toxic, perhaps in unexpected ways. In this work we focus on sedative drugs, such as those used for insomnia. Our goals are to: a) develop a laboratory model for chemical degradation of sedatives in water, with UV light, and with clays under various conditions of acidity and basicity, and run selected preliminary experiments; b) identify the products of the degradation with the GC-MS (gas chromatograph-mass spectrometer); c) find out if these degradation products were tested for their toxicity; if not, submit these compounds for toxicity testing to the NIEHS (National Institute for Environmental Health Sciences), which runs the National Toxicology Program.