

## **Collection, Processing, and Mutagenicity Assessment of Complex Environmental Matrices**

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This lecture will present an overview of the technical aspects associated with the collecting, extracting, and mutagenicity assessment of environmental and human samples including diesel exhaust particulates and semi-volatile organic compounds, contaminated soil, and human urine. An overview of recent research projects that examined mutagenic activity in vitro of the aforementioned complex environmental matrices will be presented, with special emphasis on the methodological and technical aspects of sample processing that must be considered. The lecture will present a brief overview of protocols for environmental sample collection, organic solvent extraction and cleanup, solid phase extraction of liquid samples, complex extract fractionation on open silica columns, and mutagenicity assessment in both bacterial and mammalian cell assays.

### Questions:

1. (A) Name 3 important features of a study on environmental mutagens in complex environmental samples that must be carefully considered prior study initiation?  
  
(B) What are the critical sample processing and preparation steps between collection and mutagenicity testing that ensure the generation of useful and reliable results??
2. Name two types of in vitro mutagenicity assays? What features of these assays need to be considered in relation to assessments of complex environmental samples and/or extracts of complex environmental samples?
3. Why would you employ enzymatic deconjugation during the preparation of human urine samples for mutagenicity testing?

4. Why is it important to relate the mutagenicity results back to the amount of bulk material (e.g., g dry weight soil, mL urine, etc.) necessary to induce the observed level of mutagenic activity?