

Integrating New Technologies into High School Toxicology Education

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Early introduction to the fields of toxicology and environmental health is critical for the development of the next generation of scientists. Towards this effort, the Rutgers Toxicology, Health and Environmental Disease (THED) summer program was established six years ago to provide high school students an opportunity to explore scientific careers and an introduction to principles and approaches fundamental to toxicology. Recently, we integrated interactive technologies into the program. Students were assessed on how effective the technology was in improving engagement, learning, and the overall educational experience. Poll Everywhere, a classroom response system was incorporated into presentations on forensic toxicology, histology, and pathology. Students anonymously answered multiple choice and open-ended questions, participated in word clouds, and responded to clickable image questions in real time using cell phones or laptops. This provided a way to engage students and assess their understanding of the materials being taught; it also provided feedback to instructors on teaching effectiveness. During the summer, THED students also observed a simulation of a patient undergoing cardiac arrest using a high-fidelity simulation mannequin in the Rutgers School of Pharmacy Acute Care Simulation Suite. They also toured the School's Parenteral Sterile Products and Community Pharmacy Simulation Laboratories where they learned about the preparation of intravenous and solid dosage forms of medications and counseling of pharmacotherapy plans, respectively. Using the Likert scoring system (1 low, 7 high), students rated the EMSOP simulation tour experience a mean of 6.4 (0.8 SD, N=53). The pharmacy simulation in the Acute Care Simulation Suite was the highest rated activity for the program overall. Students also commented that they enjoyed the experience and found it relevant to their future career decisions. Overall, the integration of technology into the THED program aided in student engagement and provided real time feedback assessing achievement of learning outcomes. Supported by NIEHS T32ES007148, P30ES005022, and U54AR055073.

What are the major routes of chemical exposure?

Word cloud illustrating the major routes of chemical exposure:

- dermal
- inhalation
- ingestion
- injection
- mouth
- ingesting
- respiratory absorption
- buttocks
- injection

