Unit 4- Toxicological Analysis

Content Area: **Science**
Course(s): **Forensic Science**
Time Period: **November**
Length: **12 Blocks**
Status: **Published**

Enduring Understandings

A drug is a natural or synthetic substance that is used to produce physiological or psychological effects in humans or other animals.
Analysts use a variety of screening methods to determine the identity of drugs present in a sample.
Forensic toxicologists detect and identify drugs and poisons that pertain to violations of criminal law.

Essential Questions

How do drugs and other poisons affect the human body?
How should potentially toxic substances be handled?

Content

Vocabuarly
Anabolic steroids
Analgesic
Chromatography
Depressant
Hallucinogen
Infrared
Microcrystalline tests
Narcotic
Physical dependence
Psychological dependence
Screening test
Spectrophotometry
Stimulant
Acid
Base
pH scale
Toxicologist

Skills

Name and classify the commonly abused drugs
Describe the laboratory tests normally used to perform a routine drug identification analysis
Understand the proper collection and preservation of drug evidence
Explain how alcohol is absorbed into the bloodstream, transported throughout the body, and eliminated by oxidation and excretion
Describe commonly employed field sobriety tests to assess alcohol impairment
Compare and contrast laboratory procedures for measuring the concentration of alcohol in the blood
Relate the precautions to be taken to properly preserve blood in order to analyze its alcohol content
Describe techniques that forensics toxicologists use to isolate and identify drugs and poisons

Resources

- Teacher's Wraparound Edition for Forensic Science: An Introduction, 2nd Edition

  Richard Saferstein, Forensic Science Consultant ©2011 |Prentice Hall

- Instructor's Manual with Lesson Plans for Forensic Science: An Introduction, 2nd Edition

  Richard Saferstein, Forensic Science Consultant ©2011 |Prentice Hall

- Basic Laboratory Exercises for Forensic Science: An Introduction, 2nd Edition

  Richard Saferstein, Forensic Science Consultant ©2011 |Prentice Hall

- Forensic Science Experiments (Facts on File Science Experiments) Hardcover – October 1, 2009

  by Pamela Walker (Author), Elaine Wood (Author)

- Forensic Science Experiments on File (Facts on File Science Library) Ring-bound

- Crime Scene Investigations: Real-Life Science Labs For Grades 6-12

  by Pam Walker, Elaine Wood, Christopher Stone (Illustrator)

Assessments

Performance: Lab Assignment
Lab: Analysis of Drugs and Poisons Students identify some common over-the-counter drugs and learn how to test for controlled substances using simulated drugs. They will also analyze various metals and the amino acids found in simulated body fluids to detect heavy metal poisoning.

Project: Personal
Project: Drunk Driving Students create a public service announcement to raise awareness of drunk driving among their peers .

Standards

SEP.1	Asking Questions and Defining Problems
CCC.1	Patterns.
SEP.1.a	Ask questions
SEP.1.a.1	that arise from careful observation of phenomena, or unexpected results, to clarify and/or seek additional information.
CCC.2	Cause and effect: Mechanism and explanation.
SEP.1.a.3	to determine relationships, including quantitative relationships, between independent and dependent variables.
SEP.3	Planning and Carrying Out Investigations
SEP.3.d	Select appropriate tools to collect, record, analyze, and evaluate data.
SEP.3.f	Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points or improve performance relative to criteria for success or other variables.
SEP.4	Analyzing and Interpreting Data
SEP.4.a	Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.
SCI.9-12.1.4	Mathematical representations are needed to identify some patterns.
SCI.9-12.1.5	Empirical evidence is needed to identify patterns.