**ASSIGNMENT 2 CONTEXT**

**Determining Toxicity**

Toxicity is determined by the following:

* Observing people during normal use or accidental exposure.
* Experimental studies using animals.
* Cellular studies.

Toxins can be divided into categories based on their potential harm to humans.

* Carcinogens are substances known to cause cancer.
* Endocrine disruptors are agents that bind with hormones, blocking their normal function.
* Teratogens are agents that cause malformation of a fetus through the mother.

Toxicologists are scientists that study toxins. They determine whether the toxins have any harmful effects on the environment or the human body. Toxicologists often describe toxins as either hazardous or poisonous. Hazardous substances are substances having the capacity to do harm. Poisonous substances are able to kill, injure, or impair living things with a small dose.

Assessing Risk

After determining that a substance is toxic, toxicologists and other scientists create risk assessment models. Risk assessment involves considering four steps:

* Identification of the hazard and its potential health effects.
* Dose-response (amount of pollutant to which a person is exposed).
* Mode of exposure (inhalation, ingestion, absorption, and injection).
* Determination of overall risk based on dose response and exposure.

Cost-benefit analysis can be used to determine if a risk should be taken, and what strategies can be used to regulate and control the risk. In some cases, after a risk assessment, a risk will be determined unavoidable.

The Consumer Product Safety Commission (CPSC) is a government agency created in 1972 to address some products that have presented an unreasonable risk of injury. The CPSC requires safety labels, recalls hazardous products, and enforces bans upon them.

Accidents

According to the U.S. Department of Health and Human Services, more than 400 Americans die each day due to injuries caused by accidents (2014). In fact, most people experience a significant injury at least once in their lifetime (Hilgenkamp, 2006). Although not all accidents can be avoided, understanding where the risks are, and taking steps to avoid them, is important to protecting our health.

Motor vehicle accidents are the leading cause of death in individuals between 1 and 44 years of age (CDC, 2006). The National Highway Traffic Safety Administration (NHTSA) is charged with increasing safety on the roads by writing and enforcing safety laws. Seat belts, safety seats for children, air bags, and anti-lock brakes are just some of the devices that can make traveling in a motor vehicle safer. We can reduce our risk of a motor vehicle accident by following traffic laws, and always considering what is prudent based on the driving conditions.

Accidents can also occur when we are in our homes. Common occurrences involve falls, poisonings, accidental shootings, fires, and power equipment. Young children are particularly at risk, which is why child-proofing a home is so important. Cabinets with toxic materials, medicines, and guns should be locked. Matches and lighters should be kept in a safe place.

OSHA

Concerns of hazards in the workplace led to the development of the Occupational Safety and Health Administration (OSHA). OSHA's mission is to prevent injuries and protect the health of United States workers by ensuring safe and healthful places to work (United States Department of Labor, n.d.). The major areas of concern in the workplace are air contaminants (dust, fibers, gases, and vapors), and physical (temperature, noise, and radiation), biological (pathogens), and chemical (inhaled, absorbed, ingested, or injected) issues.

References

CDC. (2006, June 28). Deaths: Preliminary data for 2004. National Vital Statistics Reports, 54(19). Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54\_19.pdf

Hilgenkamp, K. (2006). Environmental health: Ecological perspectives. Sudbury, MA: Jones and Bartlett.

U.S. Department of Health and Human Services. (2014). Healthy people.gov. Retrieved from http://healthypeople.gov/2020/default.aspx

United States Department of Labor. (n.d.). About OSHA. Retrieved from https://www.osha.gov/about.html