



## FACT SHEET

### Hillcrest Community Environmental Investigation (HCEI)

### What is Toxicology?

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This fact sheet answers the most frequently asked questions about toxicology. In order to determine the health effects due to exposure to chemicals, it is important to consider several issues such as the toxicity of chemical, how much chemical a person is exposed to (dose), how long is the exposure (duration of exposure), how a person may be exposed (route of exposure), and if any other chemicals are present. For more detailed information, please contact the Toxicology Division by phone (1-877-992-8370) or e-mail ([tox@tceq.state.tx.us](mailto:tox@tceq.state.tx.us)).

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#### **What is toxicology?**

Toxicology is the study of the harmful effects of chemicals to people, plants, and animals. A toxicologist is a scientist who studies the harm that chemicals can cause.

#### **What is toxicity?**

The term “toxicity” describes the:

- harmful effects that can be produced by a chemical
- amount of chemical, along with how long the person is in contact with it, needed to cause harm

#### **What are harmful or adverse effects?**

Harmful or adverse effects are those which damage the normal function of the body. In order to decide if an adverse effect could occur, we need to look at the amount of chemical, along with how long the person is in contact with it.

#### **What is a dose?**

The dose is the amount of a chemical that comes into contact with the body or enters the body<sup>1</sup>.

#### **What is a dose-response?**

As the amount of chemical a person is exposed to increases from a low level to a higher level, the likelihood that a harmful effect will occur also increases. The term dose-response describes this relationship. Normally, the human body deals with harmful chemicals by removing them. However, sometimes the body is not able to get rid of a chemical before it causes harm. For example, an adult can take two Tylenol pills and it would not harm their body, but if you took 20 at once, it might cause liver disease, which could lead to death.



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#### **How can a person come into contact or be exposed to a chemical?**

Pathways of exposure are all the ways a person could come into contact with a chemical if it was present in air, water, food, and soil. For example, a person can breathe in air, drink water, eat food grown in soil, accidentally eat soil by touching their fingers exposed to soil to their mouth, or their skin could come into contact with soil. Exposure can occur through:

- breathing air (inhalation).
- drinking water, eating food, and accidental ingestion of soil (ingestion).
- contact with your skin through soil and/or water (dermal).

#### **Where can I get more information on toxicology?**

The Toxicology Education Foundation developed an educational video entitled “Is it Safe?” to introduce basic concepts of toxicology. Watch the video here:

[http://www.toxedfoundation.org/video\\_pg.htm](http://www.toxedfoundation.org/video_pg.htm).

#### **References:**

1. A Toxicology Curriculum for Communities Trainers Manual: U.S. Department of Health and Human Services Agency for Toxic Substances and Disease Registry