

Name: _____

Date: _____

What's in My Backyard? **(Part 1: Using the Toxic Release Inventory)**

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This exercise is designed to guide you through a basic database search for information on toxic substances in different geographical locations. You will use an Internet resource provided by the Environmental Protection Agency (EPA), called the “**Toxic Release Inventory Query Form**” http://www.epa.gov/enviro/html/tris/tris_query.html

The Toxic Release Inventory Query Form will allow you to retrieve data from the EPA’s Toxic Release Inventory (TRI) database in Envirofacts. Your query will return information on the facility or region in question, including chemical reports, air emissions, surface water discharges, releases to land, underground injections, and transfers to off-site locations. You may narrow your search by selecting from options including facility name, geographic location, and names of toxic chemicals.

Directions:

- 1) Log on to the EPA’s website for the “Toxic Release Inventory Query Form” at http://www.epa.gov/enviro/html/tris/tris_query.html
- 2) Fill in the worksheet (pages 2-3) for two different chemicals at two different locations (you may do your geographical search by zip code, city, county or state).
- 3) Proceed to Part 2 (page 4) of this Practice Exercise.

What's in My Backyard? (Worksheet)

http://www.epa.gov/enviro/html/tris/tris_query.html

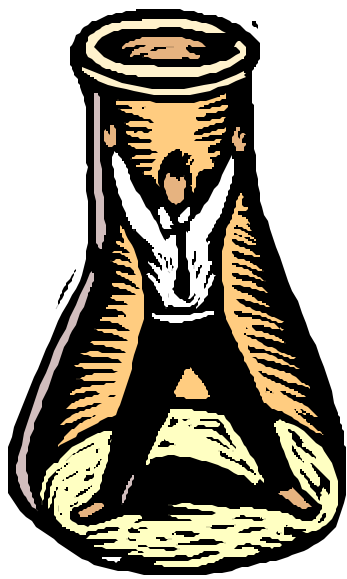
	<u>Toxic Chemical #1</u>	<u>Toxic Chemical #2</u>
Facility name and Mailing address		
Name of chemical (only need to list 1 per facility)		
Toxic Release Inventory (TRI) Reporting Year <i>** (What time span did this reporting year cover?)</i>		
How much of this chemical was released into the air, in pounds/year? List rate (pounds/year) and source. <i>** [Note: add up "Total Release (pounds/year)" data for non-point and point air emissions.]</i>		

What's in My Backyard? (Worksheet - continued)

	<u>Toxic Chemical #1</u>	<u>Toxic Chemical #2</u>
<p>How much of this chemical was released into the area's water supplies, in pounds/year? List rate (pounds/year) and source.</p> <p><i>**[Note: add up "Total Release (pounds/year)" data for discharges to receiving streams and water bodies, and underground injection to Class I and Class II-V Wells.]</i></p>		
<p>How much of this chemical was released onto or into the land, in pounds/year? List rate (pounds/year) and source.</p> <p><i>**[Note: add up "Total Release (pounds/year)" data for disposal into RCRA Subtitle C landfills, other landfills, land treatment/application farming, surface impoundment, and other disposal.]</i></p>		

What's in My Backyard? (Part 2 : Using ToxFAQs and MSDS Sheets)

(Note: FOR MORE INFORMATION – Contact the Agency for Toxic Substances and Disease Registry (ATSDR) Information Center by phone at 1-800-447-1544, or by fax at 404-639-6359. The ATSDR can direct you to more information sources, tell you where to find occupational and environmental health clinics, and refer you to specialists who can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances.)



You are now ready to search for more information on one of the toxic chemicals that you researched in Part 1 of this exercise.

In this lesson segment, Part 2, you will find out about how this chemical affects human health, what industries produce this chemical, and the US federal government's recommended safety levels for the chemical at work, in the water, air or land.

Toxicology information on many toxic chemicals is available to the public on the Internet. You will be using two Web information sources: (1) **ToxFAQs**, provided by the Agency for Toxic Substances and Disease Registry (ATSDR), <http://www.atsdr.cdc.gov/toxfaq.html> and (2) **Material Safety Data Sheets (MSDS)**, from the Vermont Siri MSDS Archive - Site One, <http://siri.uvm.edu/msds>

Directions:

- 1) Log on to the ATSDR's website for ToxFAQs at <http://www.atsdr.cdc.gov/toxfaq.html>, and/or log on to the Vermont Siri MSDS Archive at <http://siri.uvm.edu/msds>.
- 2) Choose ONE of the chemicals you researched in Part 1 of this exercise, and search for information.
- 3) Answer the **Toxic Chemical Worksheet** (page 5).

TOXIC CHEMICAL WORKSHEET

1) What is the name of the toxic chemical you are researching? What are its synonyms?

2) List the ways that humans can be exposed to this toxic chemical (i.e., via inhalation? Ingestion? Skin contact? Eye contact?)

3) What are the potential health effects associated with this chemical?

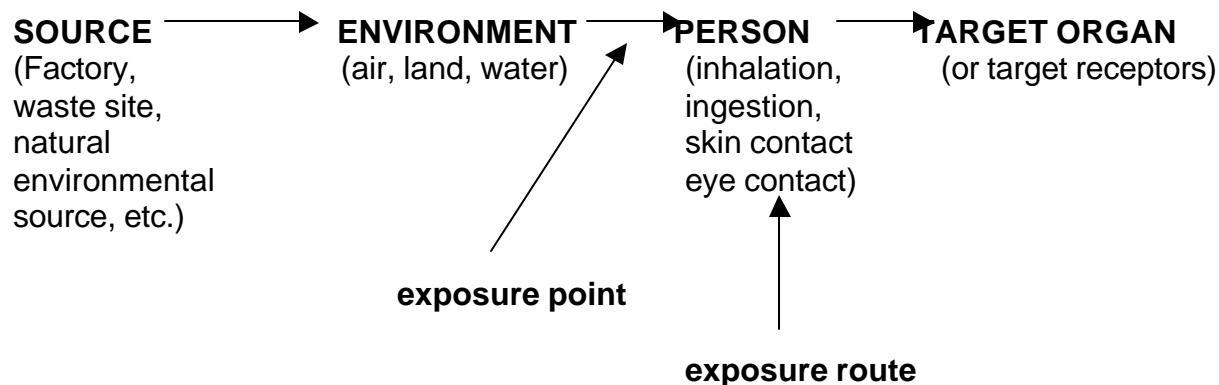
4) Is this chemical **KNOWN** to cause cancer in humans? Why? (CAREFUL!! – Be sure to distinguish between *suspect* and *known* and provide an explanation.)

5) Does this chemical occur naturally in the environment? If available, give information on half-life. What consumer products/ industries can this chemical be found in?

What's in My Backyard? (Part 3: Exposure Risk)

The following questions are meant to start you on a process called “Exposure Assessment.” Exposure Assessment is the analysis by which scientists and investigators try to determine whether or not people have been exposed to a hazardous substance. This is important, since logically, exposure to a toxic substance **MUST** occur **BEFORE** signs and symptoms of illness or disease can occur, **IF THE TOXIC CHEMICAL IS CAUSAL TO THE ILLNESS OR DISEASE**. (In other words, if people in a community develop a strange illness, but are not found to have been exposed to the suspected toxic chemical, then it follows that the chemical **CANNOT** have caused the disease.) **Exposure (cause) MUST precede disease (effect)**.

Exposure Assessment seeks to identify an exposure pathway (i.e., a pathway by which the suspected toxic chemical leaves its source, enters the environment, and then comes into contact with a person or population – or even further still, with a target organ or even with a cell receptor in the exposed person’s body.) A potentially complete human exposure pathway could describe a route like this:



For example:
Asbestos → **Indoor Air** → **Teachers & Students** → **Lungs**
 (SOURCE: ceiling popcorn at school;
 Mechanism of release: ceiling popcorn degrades or is disturbed.)

Note that “the effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.” (ATSDR) In other words, in the above example, if you were a teacher or student who was exposed to asbestos at your school, the effects of exposure might vary anywhere from no effect to lung cancer or mesothelioma, depending on many other factors.

WHAT'S IN MY BACKYARD? PART 3: EXPOSURE RISK (CONTINUED)

Note: To answer these questions, you may refer to the attached glossary of important definitions.

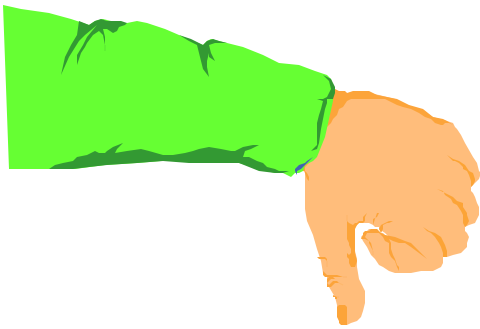
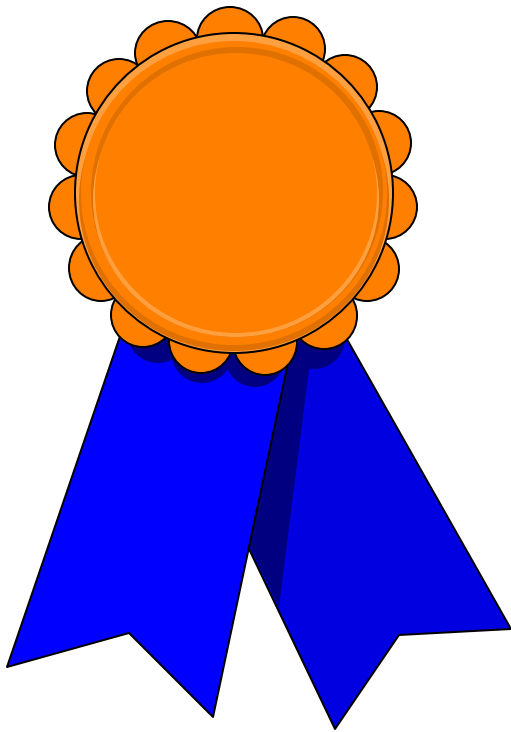
Chemical Name:

Company:

1) What is the most likely route of exposure for people in the surrounding neighborhood? Justify your answer. (HINT: Refer back to how this chemical was released into the environment e.g. Landfill disposal may result in water contamination, then the most likely route of exposure would be ingestion.)

2) Do you think the people in the surrounding neighborhood have a high, medium, or low risk of being exposed to this toxic chemical at levels that may affect their health? Explain.

3) Has the federal government made recommendations about exposure limits for this chemical, in order to protect human health? List all appropriate exposure limits given your answer in #1. (Please record units accurately!)



BONUS! EXTRA CREDIT!.....

- 1) Log on to the Environmental Defense's Scorecard website at <http://www.scorecard.org>
- 2) Click on any of the environmental issues options (from "Criteria Air Pollutants" to "Setting Environmental Priorities").
- 3) On the left side of the screen, on the green menu bar entitled "Environmental Defense" click on "Pollution Rankings."
- 4) Click on "Rank counties by ..." and select "Emissions of Toxic Chemicals (TRI)."

QUESTION: What county ranks #1 in the entire United States for having the most total toxic chemical releases to the environment, according to the EPA's Toxic Release Inventory? (Total environmental releases = the sum of chemicals covered by the Toxic Release Inventory that manufacturing companies have released to air, surface water, underground injection and land.)

ANSWER: _____

- 5) Click on the name of the #1-ranked county. Then, in the "Environmental Release Report" for that county, click on the menu option "Take Action."
- 6) Click on the option "Send a fax to the companies responsible for the top-ranked pollution problems in _____ County."

QUESTION: List 5 of the top-ranked polluters. (Note: Scorecard reports the polluters alphabetically, NOT in rank-order.)