

TOXIC TRESPASS

Addressing health concerns from Oil-Chemical exposures

Trainer's Manual

a collaborative project with

Achieving Community Tasks Successfully (Pleasantville, TX)

Arkansas Environmental Justice Network (Conway, AR)

Mobile Environmental Justice Action Coalition

NAACP Mobile County Branch #5044

Sierra Club Delta Chapter, Acadian Group (Lafayette, LA)

South Bay Communities Alliance (Coden, AL)

Steps Coalition (Biloxi, MS)

Texas Environmental Justice Advocacy Services (Manchester, TX)

and

ALERT, a project of Earth Island Institute (Berkeley, CA)

Work made possible by Compassion and Love
with occasional gifts from those able to pay it forward

Citation: Ott R, Harris EL, Arellano Y, Crosslin J, Lowe L, McConnell L, Murray B, Nieto Y, Sprague R, Stephens T, Bosarge L, Broussard M. *Toxic Trespass: Addressing Health Concerns from Oil-Chemical Exposures. Trainer's Manual*. Berkeley: ALERT Project, Earth Island Institute, April 2016. www.alertproject.org/health

Introducing Our Team

Most of our team members live in or near fence-line communities in one of the largest petrochemical producing regions in North America. Some have lived in communities directly harmed by large Oil-Chemical disasters; others are at risk of Oil-Chemical exposures from daily industrial activities and too-frequent disasters.

We have first-hand experience – earned expertise – dealing with illnesses from exposures to Oil-Chemical pollutants and consequences of laws that protect corporate profits over human health and our environment. Several team members have advanced degrees and have worked in health fields.

We wanted to design a program to help our community residents understand the connection between environmental health and human health. We wanted to work with people with academic training in health fields to ensure that their information would be accessible to our youth and community residents. We wanted a peer-led process to build confidence and social skills, a process that would engage people in the community-level work that drives social change. We wanted our program to nurture trust and relationships, and build capacity to sustain this long-term work.

We developed the Toxic Trespass Training Program, because chronic diseases from exposures to environmental pollutants are preventable – and we wanted to prevent the chronic diseases that plague our community residents. We want to reduce toxic exposures in our homes, workplaces, schools, and communities.

We believe that once community members understand the health impacts from Oil-Chemical exposures, and are trained to use scientific information, people will work together in a community-driven process to identify solutions and take actions to improve their own health and wellbeing.

It is going to take a lot of us, working together, to reduce dangerous pollutants in our environment and chronic diseases that often result from exposures to these pollutants because these are societal issues – deciding who pollutes, who is polluted, and who regulates and enforces policies designed to protect human health and our environment.

Our program addresses these questions. What are these toxic pollutants? How do toxic pollutants get into our environment? What are the health effects of exposures to Oil-Chemical pollutants and how do we recognize symptoms of exposure? How do we reduce exposures to these toxic pollutants? If we are already sick with chronic illnesses or disease, how do we find medical doctors to properly diagnose and treat chemical illnesses?

We designed our training program to be shared in homes, schools, workplaces, and at community workshops. We made the content easy to understand and the process engaging. We hope you agree – and will be inspired to start a Toxic Trespass Training Program in your community!

~ The Toxic Trespass Team

The Toxic Trespass Team

Arkansas

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Key for Trainers' Guide

Code Indicates

- Telling participants: Info to read or paraphrase in your own words
- ➔ Asking participants: Question used to engage participants in dialogue
- Subpoints of paragraph whether telling or asking participants
- Subpoints within a sentence
- <CLICK> Arrow down to start animation

Slides

- Circle with number in top right corner: Slide number for reference to Trainers' Manual
- Caution tape in top left corner: Indicates Community Story or test scenario

Considerations for translators

- Prepare translators
 - Provide Trainers' Manual, Learning Guide, Pre-Evaluation, and Evaluation Form in advance
 - Note definition section of Trainer's Manual to prepare translators for unusual words
 - Invite translators to a practice session to familiarize them with all the material
- During event, announce:
 - Simultaneous translation is occurring so there will be audible talking
 - Every 20 minutes we will stop and be silent for one minute for translators to rest

Notes for Trainers

- Preparing for event
- Download and embed movie files in slides 3, 15, and 25
- Fill in contact info for local trainers on slide 26
- Practice entire presentation – in case of last minute changes in assignments and also to be ready if audience “jumps” (gets ahead of where you are, so you will be prepared to “jump” with them)
 - practice SLOW LOUD conversational reading for ESL participants, in particular, but also for comprehension of concepts
 - practice with another trainer, alternating roles as presenter and slide changer
- Decide as team whether to do **lunch** or two 20-minute **breaks**. Prepare accordingly. (It's important to keep people connected and in the space to allow conversations and building relationships. Lunch or snacks on-site are an important part of event.)
- Pre-assign duties for trainers for event
 - **sign-in and materials:** ensures participants, including latecomers, sign in • receive a Lesson Guide • fill out Pre-Evaluation Form • turn in Evaluation Form
 - **time-keeper:** announces start and end of event • announces start and any breaks, including 5-minute warning before break ends to ensure people are ready to start again on time • calls for 1-minute of silence every 20 minutes for translators

TOXIC TRESPASS

- **food and beverage duty:** ensures lunch or snacks are ready before breaks; cleans prep and serve areas
- **technology duty:** set up and take down projector and computer; test sound system
- Copies of material
 - one copy of Lesson Guide, , Pre-Evaluation Form, and Evaluation Form for expected number of participants – plus 10 extra sets
 - 5 extra copies of Trainers' Manual for prospective trainers

Day of event

- Arrive early to ensure event is set up and ready to go when “doors open” – 30 minutes before program starts. This allows time for sign-in and conversation with trainers.
- End program 30 minutes before the time to leave the building to allow for cleanup.

During event

- During opening announcements, inform everyone when we must be out of room or building. Remind people about this after breaks.
- Managing conversations during presentation
 - **Repeat** questions so everyone can hear them.
 - Jumps: If or when a person “jumps” to content covered later in presentation: 1) acknowledge information and say info will be covered in detail later; and 2) when you cover the material later, remind people that so-and-so brought this point up earlier (to validate person).
 - Derailing conversations or questions: remind speaker of point of slide and redirect conversation to this point; invite people to share personal stories during lunch
 - Use rain barrel analogy to drive home points or answers to questions
 - Questions that trainers can't answer: It's okay to say, “I don't know but let's find out.” Trainers should write down these questions to discuss with the Toxic Trespass Team. Local trainers should communicate answers to local participants.
- Interactive exercises
 - Start and STOP everyone at same time to reduce side conversations
 - Remind people to • LISTEN to each other • speak loudly and slowly when talking • speak one at a time
- Evaluation forms
 - Hand out Pre-Evaluation Form at sign-in table; collect before starting workshop
 - Hand out Evaluation Form about 15 minutes before end of workshop
 - Collect Evaluation Forms at sign-in table as people exit
 - Compile data from forms for use during debriefing session
- Debriefing session
 - Week following event, schedule session with all trainers and translators to discuss what went right, participant evaluation, and ways to improve future workshops

01

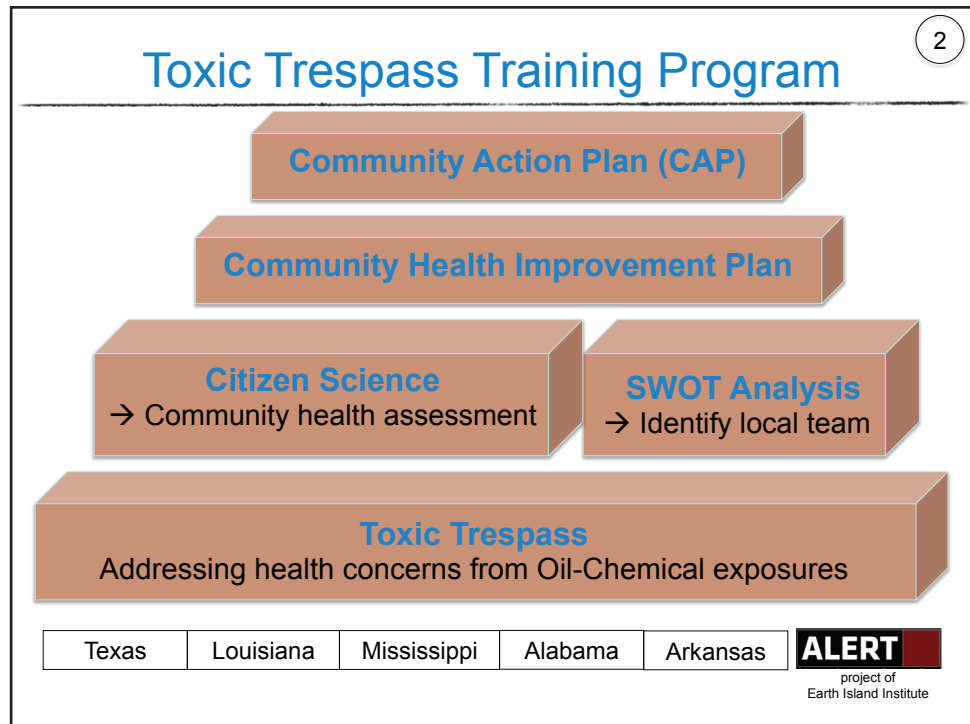
TOXIC TRESPASS

Health Concerns with Oil-Chemical Exposures



1 - Cover Slide

- WELCOME everyone. Thank you for joining us for our workshop, Toxic Trespass.
 - Introduce instructors and translators
- Translation
 - Simultaneous translation is occurring so there will be audible talking
 - Every 20 minutes we will stop and be silent for one minute for translators to rest
- Housekeeping
 - Location of restrooms. Breaks: 40 minutes for lunch (or two 20-minute breaks)
 - Materials: ask if anyone needs a Learning Guide? **Collect Pre-Evaluation Forms.**
- Ground rules
 - Time: when event ends and when we need to be out of room or building
 - Sound: demonstrate call for quiet or return from breaks to keep on track
 - Remember to speak slowly and loudly so everyone in room hears
- LET'S GET STARTED! *Toxic Trespass* is a teaching tool, created with and for people living in **fence-line communities**.
 - ➔ Can someone explain what a fence-line community is?(Summarize definition using participants' words.)
e.g., a fence-line community is a neighborhood that is immediately adjacent to a company and is directly affected by the Oil-Chemical emissions, odors, noise, traffic, parking, and operations of the company



2 - Toxic Trespass Training Program

- The Toxic Trespass Training Program is a workshop series to share information and skills that people can use to better protect their health and community from Oil-Chemical exposures.
- Programs are designed as building blocks that lead to creating and doing action plans. The five programs in this series include:
 - *Toxic Trespass*: Addressing health concerns from Oil-Chemical exposures;
 - <CLICK> *Citizen-Science*: Create a community health assessment with mentoring and mapping of pollutants, sources, and at-risk populations;
 - <CLICK> *Community SWOT Analysis*: Identify local human resources and create a foundation for reducing toxic exposures in the community;
 - <CLICK> *Community Health Improvement Plan*: Create a long-term, systematic effort to address public health and worker safety concerns relating to Oil-Chemical activities and diseases; and
 - <CLICK> *Community Action Plan*: Identify strategies and implement a plan to reduce exposures to Oil-Chemical pollutants in homes, workplaces, schools, and communities.
 - <CLICK> The Toxic Trespass Team includes 12 partners in 5 states.
- This first training uses stories from across the United States and Canada to illustrate the common health threat posed by Oil-Chemical exposures. The other trainings will “get local” with maps, monitoring programs, and strengthening policies and planning to protect human health from Oil Chemical exposures.

03



Why is this important? [Listen...](#)

3



Recovering submerged oil in the Kalamazoo River. Purina and Kellogg's food processing plants on the river bank.

Battle Creek, Michigan
Courtesy: Craig Rltter

ALERT

3 - Why is this training important? Listen ...

- We're going to watch a film about health effects from the 2010 Enbridge tar sands Oil-Chemical disaster in Michigan.

INSTRUCTIONS

- First, warn people: Some images in this film are disturbing, especially for children!
- <CLICK> to view film
- ➔ **After** film, ask for show of hands: How many of you are aware of what happened in Michigan? (This happened after the BP disaster, so media largely missed it.)
- Who has experienced similar symptoms after Oil-Chemical spills or activities?

Enbridge spilled over one million gallons of tar sands oil and dangerous chemicals into Talmidge Creek in Michigan. Pollutants flowed into Battle Creek and the Kalamazoo River. Thirty-five miles of river were closed. County health officials asked 30 to 50 households to evacuate, and advised 100 households not to drink their water. Health care providers conducted four community surveys along impacted waterways. State health officials reported providers found nearly 60 percent of 550 individuals surveyed had adverse health effects. Prominent symptoms were headache, nausea, and respiratory issues. Spill cleanup took over four years. No one received compensation for health issues.

- This story **repeats** with every oil or chemical spill – **and it repeats daily in fence-line communities.** Fence-line communities are like slow moving Oil-Chemical spills.
- Oil-Chemical exposures happen without most people even knowing they are happening and certainly without people's consent. This is called **Toxic Trespass**. It stops when enough people are aware of the problem and choose to act.

04

TOXIC TRESPASS ~ Objectives

4

We will learn to:

- Identify Oil-Chemical hazards in the environment & explain how exposures occur
- Explain how these exposures could affect health
- Recognize symptoms related to Oil-Chemical exposures
- Identify ways to reduce Oil-Chemical exposures in your environment
- Find a qualified Health Care Provider to properly diagnosis & treat Oil-Chemical illnesses

ALERT

4 - Toxic Trespass ~ Objectives

- In this training, we will learn to:
 - <CLICK> Identify types of Oil-Chemical hazards in the environment and explain how exposures occur
 - <CLICK> Explain how these exposures could affect health
 - <CLICK> Recognize symptoms related to Oil-Chemical exposures
 - <CLICK> Identify ways to reduce Oil-Chemical exposures in your environment
 - <CLICK> Find a Health Care Provider to properly diagnosis and treat Oil-Chemical illnesses

Does everyone have a **Learning Guide**? It summarizes the key points in this workshop and we will refer to it as we go along.

05

5

Types of environmental health hazards

Oil-Chemical



Houston Ship Channel

Biological



Disasters




Hurricane Katrina

Waco fertilizer plant

Electro-Magnetic Radiation



ELECTRIC VEHICLE

ALERT

5 - Types of environmental health hazards

- Toxic Trespass focuses on Oil-Chemical pollutants. However, we need to be aware of other types of environmental health hazards that *might also influence our bodies' abilities to deal with Oil-Chemical pollutants.*
- So let's look at common environmental health hazards. <CLICK>
- Oil-Chemical industrial pollution is now considered our greatest health hazard. Worldwide, it is a bigger problem than malaria or tuberculosis. In industrialized areas like the Houston Ship Channel, some health hazards are:
 - **oil volatiles** (VOCs, Volatile Organic Compounds) evaporate quickly like gasoline fumes; e.g., one VOC in oil is benzene, a cancer-causing substance also found in cigarettes
 - **oil particulates** (PAHs, Polycyclic Aromatic Hydrocarbons) are part of crude oil, tar sands oil, coal, refined fuels; PAHs also formed during incomplete combustion of oil and oil products; e.g., "soot" from diesel trucks; PAHs also are concentrated in petcoke, a toxic waste from oil refining processes
 - **chemicals** – over 85,000 industrial chemicals available for use; of these EPA tests only for a very small percentage for safety. <CLICK>

INSTRUCTIONS: Use photos to help participants identify health hazards

- ➔ <CLICK> What do you see? **Electro-Magnetic Radiation** is a common health hazard.
- clock radios, cell phones emit **radio waves**. (Some countries limit cell phone use by young children because of health dangers.)
 - Cell towers, hybrid and electric cars emit **microwaves**. (Some states have set-back requirements from schools and other human dwellings. There are also products for hybrid and electric cars, like there are for cell phones, to shield people from the radiation. See Resource section of the **Learning Guide**.)


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- NOT SHOWN: • more invisible things are flying through the air • thermal imagery emits **infrared radiation** • sun emits **ultraviolet radiation** (exposure is sun burn!)
- Medical and dental x-ray imagining emits **x-rays**.
- Nuclear power uses minerals like uranium with naturally-occurring **gamma rays**. Oil is also naturally radioactive. This is why old oil pipelines should not be used in playgrounds! <CLICK>

- ➔ Why is this lady sneezing? (Pollen is triggering allergic response) Ask:
 - What are some other types of common **biological health hazards**?
 - Common colds or flu are caused by what? (bacteria and viruses)
 - Flooding of a home causes what to grow? (mold and mildew)
 - On a windy day, what blows into eyes and is irritating? (dust – irritant to lungs, too!)


- <CLICK> During **natural disasters** like • hurricanes • floods • fires • earthquakes and **man-made disasters** like • oil or chemical spills • nuclear meltdowns • or acts of terrorism, environmental health hazards are a mixture of • Oil-Chemical pollutants • biological toxins • and particulates from dust and fires.
- In addition there is mental health trauma (PTSD or Post Traumatic Stress Disorder) from the disaster, the disaster response, and any claims process or litigation.
 - <CLICK> to restore original slide
- See the Resource section of your Learning Guide for more information about these environmental health hazards.

06



Why “Oil-Chemical” pollutants?

6



“Oil” in
Clean Water Act

“Pollutant” &
“Hazardous
substances”
in Superfund

Pollutant: may cause death • disease or infection
 • behavioral abnormalities • cancer • genetic mutation
 • endocrine disruption • reproductive malfunction and
 • other physical malfunction • in exposed organisms and
 • their offspring including humans.

ALERT

6 - Why “Oil-Chemical” pollutants?

- There is a reason we say “Oil-Chemical” pollutants. It is a first step towards changing people’s understanding that oil is toxic and oil exposures can harm human health.
- Here is the problem. <CLICK> “**Oil**” is defined in law in the Clean Water Act of 1972. It includes crude oil and its parts like the VOC gases, oil particulates, sludge, and fuel oils.
- <CLICK> The words “pollutant” and “hazardous substances” are defined in a different law – CERCLA (sir-kla) or Superfund Act of 1980. **Superfund does not include oil.**
- “Pollutant” means any health hazard **except oil** that, <CLICK> may cause death • disease or infection • behavioral abnormalities • cancer • genetic mutation • endocrine disruption • reproductive problems and • other physical problems • in exposed organisms and • their offspring – including humans.
- Since these laws were created over 35–45 years ago, scientists have found that crude oil and many of its parts—like oil volatiles (fumes) and oil particulates—have **the same effects as other hazardous substances and pollutants.**
- The legal definitions have not been updated to reflect the new science. This means two things:
 - Oil is **not recognized in law** as a health hazard – a **pollutant** – when it really is; and
 - Our **laws don’t protect us from harm** caused by Oil pollutants. Our air quality standards • water quality standards • worker safety standards • public health standards do not protect people and wildlife from harm caused by oil.
- People are getting sick **BELOW** the levels thought to be safe for exposure. The levels need to be **LOWER** to be more protective.

TOXIC TRESPASS

The STORY in this photo <CLICK> is about how Alaska fishermen worked together to change scientists' understanding of oil toxicity.

After the *Exxon Valdez* oil spill in 1989, government scientists and Exxon told fishing communities in Prince William Sound that oil would only have short-term harm to their fisheries. Four years later in 1993, the pink salmon and herring populations collapsed in the sound. Fishermen believed there was harm to offspring of parent fish that had survived the oil spill. Commercial fishermen blockaded oil tanker traffic coming into the Port Valdez tanker terminal until President Clinton met their demands: No fines for civil disobedience and long-term field studies to find the cause of the fish collapses. <CLICK> Over the next ten years, scientists learned that exposure to very low levels of oil could harm fish and other wildlife and lead to population collapse. These levels are 1,000 times lower than what laws consider “safe enough.” (Specifically, harm occurs at 1 - 20 ppb PAHs.) Fishermen were not fined for civil disobedience.

- <CLICK> So – **changing these laws** starts with us calling oil a pollutant like other chemicals – and then collecting evidence of harm as we’ll learn to do in other trainings in this series.

07

Where do **Oil-Chemical pollutants** go?

7



7 - Where do Oil-Chemical pollutants go?

- Where do pollutants go once they are released?
 - into our • air • water • land • food
 - also into • homes or buildings • products • all living beings including humans
- Let's look at these photos for sources of pollutants or other clues that might indicate where pollutants go when released.

INSTRUCTIONS: Guide an **open group discussion**, using photos and questions to prompt answers.

Photo top left <CLICK>

- Do you see a source of AIR pollution in this photo? (Hint: center of photo)
 - Flare or vent stacks often show release into the air.
- Now look above the flare: Do you see another source of pollution? (Power lines might be hard to see)
 - <CLICK> Power lines show Electro-Magnetic Radiation release into the air.
- Does Electro-Magnetic Radiation spread the same way as Oil-Chemical pollutants?

(No. Electro-Magnetic Radiation radiates outward 360 degrees from its source.)
- Are homes a barrier to Electro-Magnetic Radiation?

(No. Electro-Magnetic Radiation penetrates walls and goes into homes. This is why many countries other than the United States restrict cell towers within 1,500 feet of buildings like schools.)

 - <CLICK>

Photo top right <CLICK>

- Do you see a source of AIR pollution in this photo?

Toxic TRESPASS

- Smoke or vent stacks show release into the air
- <CLICK> Floating-roof tanks release oil volatiles or VOCs into AIR daily because the seals always allow gases to escape, and the roofs have vent tubes to release excess pressure as gases to prevent fires and explosions.
- Once pollutants are released into the air, the pollutants may travel some distance from their source, but eventually they settle out and deposit onto what? (LAND or other surfaces) <CLICK>

Photo bottom right <CLICK>

- ➔ Where is this pesticide going in this photo? (FOOD, AIR and LAND)
- ➔ Might this release also contaminate the WATER? How? (runoff from land into water) <CLICK>

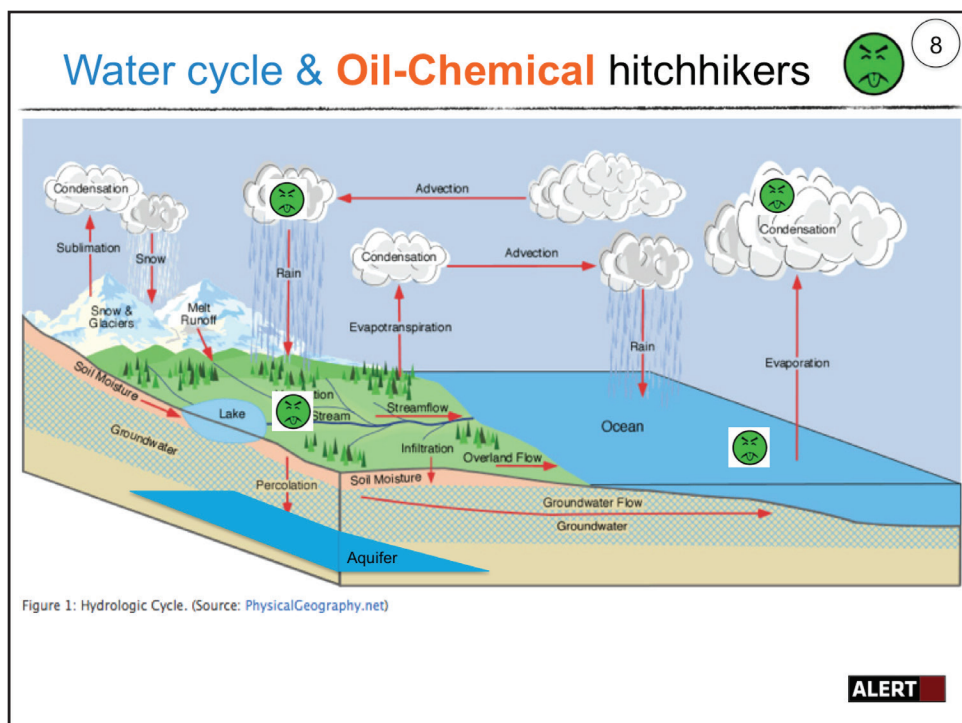
Photo bottom middle <CLICK>

- ➔ Has anyone seen the burning tap water from the film *Gaslands*? What does this indicate?
- This well WATER was contaminated with chemicals and oil volatiles released during fracking activities. Oil volatiles vent or off-gas from the water into the AIR and will burn when lit. <CLICK>

Photo bottom left <CLICK>

- ➔ The sign clearly warns not to “swim, wade, or fish.”
- This river WATER was contaminated by a chemical spill from the Temple-Inland paper mill in Bogalusa, Louisiana. The chemicals depleted oxygen levels, killing fish, shellfish, and turtles along 40 miles of river.
- ➔ Might this release also contaminate the AIR? How? (evaporation from water into air) <CLICK>
- Once Oil-Chemical pollutants are released into the environment, many are **persistent** – they are not easily broken down. So they to move through our air • water • land • and food. How exactly does this happen? Let’s look.

08



8 - Water cycle... pollutants as hitch-hikers

Oil-Chemical pollutants act like hitchhikers, traveling with water molecules as part of the water cycle. The green Mr. Ick will show how this happens. For example, during the BP Deepwater Horizon spill,

- <CLICK> Oil and Chemical pollutants were released into the water.
 - <CLICK> Pollutants were carried into the atmosphere when water evaporates from oceans, rivers, lakes, and even snowfields. When water molecules rise high enough, they cool and condense into clouds. During summer 2010, NASA scientists measured Oil-Chemical pollutants at levels high enough to cause harm to human health across the Gulf of Mexico region.
 - <CLICK> Pollutants are carried over land in humidity, sea breezes, and clouds. They may be carried far inland – as far inland as the hurricanes go.
 - ➔ How far is that? (300 to 500 miles)
 - <CLICK> Pollutants come down with the rain.
 - <CLICK> Pollutants drain into streams and eventually return to coastal seas or
 - <CLICK> drain into ground water and aquifers.
- **Aerial transport of pollutants** is how Oil-Chemical pollutants and other small material like dust and pollen can end up in regions far distant from their source.
 - For example, ice cores have found Oil-Chemical pollutants, heavy metals, and even pollen and dust, in polar regions – thousands of miles away from where the pollutants were released.
 - **Exposures occur after** Oil-Chemical pollutants are released into our environment.

Routes of Oil-Chemical exposures

9



Manchester (Houston)

ALERT

9 - Routes of Oil-Chemical exposures

Once released into the environment <CLICK> there are four ways that Oil-Chemical pollutants are absorbed into the body.

- Breathing • Skin contact • Eating • Drinking

- These are called “**exposure pathways**” or “**routes of exposure.**” Of these, **inhalation** is the most common pathway.
- ➔ To identify routes of exposure in this photo, first look for a likely source of pollution. What do you see? Where is it going?
 - flare or vent stacks releasing into AIR
- ➔ Pollutants in the air settle onto what? (LAND and surfaces)
- ➔ Now, what exposure pathways are happening in this photo? How are the pollutants getting into this child’s body?
 - **inhalation** from the air
 - **skin contact** from pollutants in air and on furniture

- Once Oil-Chemical pollutants are absorbed into our body, three things can happen. <CLICK>
 1. Pollutants could be **metabolized** or **broken down** by special enzymes. However, a body's ability to make these special enzymes matures fully in older children. Fetuses and babies do not have them. In adults, these enzymes will also attack other complex hydrocarbons in bodies like reproductive hormones! Our bodies do not have perfect ways to break down Oil-Chemical pollutants.
 2. Pollutants could also be **eliminated**;
 3. or **stored** in fat tissue or organs or even bone or bone marrow.
- Pollutants that get stored in our bodies are like a ticking time bomb. They could cause problems anytime, even long after the exposure. For example, after strenuous exercise, like mowing the lawn or playing with the kids or grandkids, these pollutants could mobilize out of fat tissue back into blood to poison your system all over again. This is called a **re-release**.
- <CLICK> **Elimination pathways** are through normal body functions:
 - exhaling • sweating • peeing • pooping • throwing up • for women: menstruating • nursing • birthing – pollutants are transferred to baby through the umbilical cord!
- ➔ Who is less able to eliminate pollutants from their bodies? Children? Or adults? Why?

10

10

Oil-Chemical **exposures** & health effects

Affected systems

- Respiratory system
- Central Nervous System
- Blood
- Skin
- Immune system

Initial common symptoms

- Cold/ flu-like symptoms
- Worse asthma/ bronchitis
- Bad headaches
- Brain fog, memory loss, forgetfulness
- Dizziness, nausea
- Tingling feet & hands
- Seizures
- Ear & nose bleeds
- Bleeding hemorrhoids
- Skin rashes & lesions
- Sick or tired all of the time

Graphic: Riki Ott

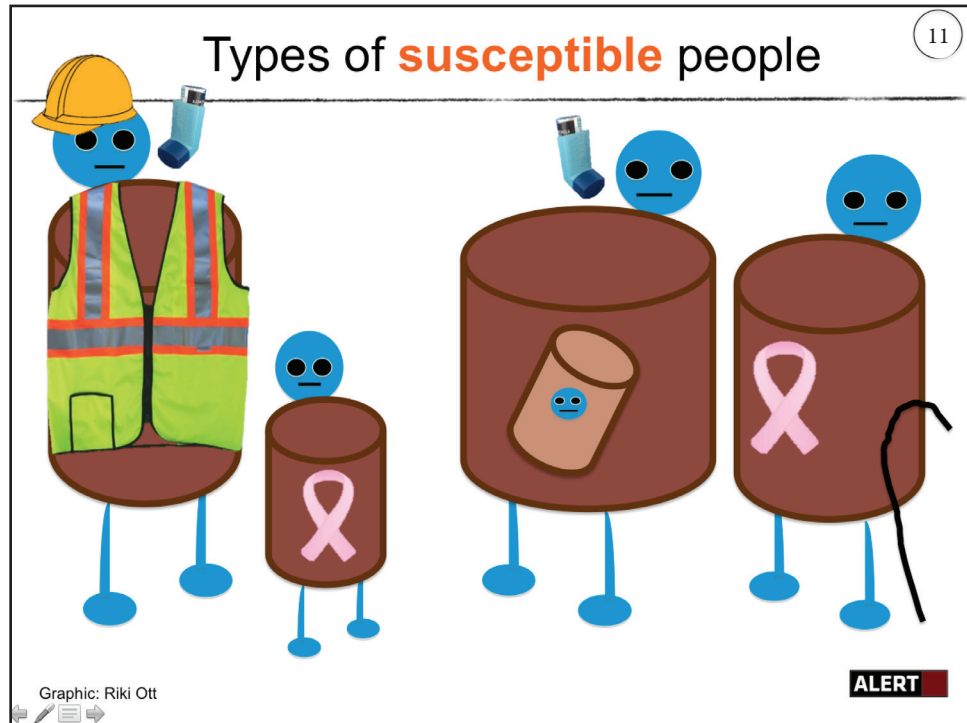
ALERT

10 - Oil-Chemical exposures and health effects

- Most of us, but especially people in fence-line communities, are exposed every day to Oil-Chemical pollutants.
- To consider health effects of toxic exposures, **let's think of our body as a rain barrel** that slowly fills up over our lifetime with Oil-Chemical pollutants.
 - First, we all start life with a load of Oil-Chemical pollutants in our bodies that came in through the umbilical cord. <CLICK> That first load is shown by this green pool in the rain barrel. Newborn babies might have up to 300 chemicals in their bodies, some at levels high enough to cause developmental and learning problems!
 - <CLICK> Once born, more Oil-Chemical pollutants enter our bodies through breathing, skin contact, drinking, and eating.
 - Then maybe one day, there is an Oil spill or a Chemical release in your neighborhood. <CLICK>. Your body is suddenly overwhelmed with Oil-Chemical pollutants. Your rain barrel fills up and overflows! You become sick.
- There are **common symptoms** for Oil-Chemical exposures, just like there are common symptoms for other health hazards. <CLICK> Your body expresses symptoms through several **affected systems**. <CLICK>
- For example, pollutants that are **INHALED** can affect the **respiratory system**. <CLICK> Some common symptoms are • cold and flu-like symptoms • worsening asthma or bronchitis
- Pollutants that are inhaled also affect the **central nervous system**. <CLICK> Common symptoms are • bad headaches • brain fog, memory loss, forgetfulness • dizziness and nausea • tingling feet and hands • blurry vision • even seizures or more frequent seizures – like what we saw and heard in the first film clip.

- Also pollutants that are inhaled also affect the **blood**. <CLICK>
Common symptoms are • ear and nose bleeds, bleeding hemorrhoids (HEM-uh-roids), and blood in the urine.
- Pollutants that are absorbed across the **skin** irritate the skin. <CLICK>
Some common symptoms are skin rashes and lesions.
- Pollutants also depress your **immune system** function and can affect your whole body. <CLICK>
Common symptoms are being sick or tired all of the time.
- This list is not inclusive.
- ➔ Would you go to a doctor or nurse for most of these symptoms? Why or why not?
(Except for seizures, most of these symptoms appear fairly “normal” or “non-life threatening.” So most people would try to self-treat or self-medicate first and see if they get better before seeking medical help.)
- Your body only has so many ways to warn of danger. Symptoms for Oil-Chemical exposures are identical to symptoms for • colds or flu • a bad headache • a bout of vertigo (dizziness) • heat stroke or heat exhaustion • food poisoning • or a skin rash. This confuses many people – including doctors and other Health Care Professionals!

11



11 - Types of susceptible people

- These “rain-barrel” people represent types of people who are more AT-RISK from Oil-Chemical exposures than other people. These people are more SENSITIVE to Oil-Chemical exposures and more likely to get sick.

INSTRUCTIONS: Ask question, then STOP to let participants identify rain-barrel people.

- ➔ Do you recognize who each represents?
 - Worker
 - Child
 - Pregnant woman
 - Developing baby
 - Elderly person (with cane)

INSTRUCTIONS: Turn to a neighbor. Take turns. Each chooses a vulnerable person.

- Talk about why each of your choices is considered more at-risk to Oil-Chemical exposures. Work with the rain-barrel concept.
 - ➔ Why would your person’s rain-barrel fill more quickly than other people’s?
- Be ready to share your ideas in a few minutes.

Susceptible people	Why are they at higher risk from Oil-Chemical exposures?
Worker	<ul style="list-style-type: none"> - exposed to lots of Oil-Chemicals so body may fill quickly - chronic exposures to Oil-Chemicals so body nearly full - protective standards outdated so at-risk of exposure to dangerous levels of Oil-Chemical pollutants
Young child	<ul style="list-style-type: none"> - smaller body weight so rain barrel fills up more quickly when in the same exposure as adults - breathe more rapidly than adults, so they get higher doses of pollutants for their body weight when in same exposure as adults - limited ability to eliminate Oil-Chemical pollutants - more likely to ingest pollutants by putting things in mouth
Pregnant woman	<ul style="list-style-type: none"> - body stressed from demands of pregnancy and is less able to handle pollutants - taking more pharmaceuticals
Developing baby	<ul style="list-style-type: none"> - defenseless against Oil-Chemical pollutants - tiny body so tiny amounts of pollutants could have big impact - body developing rapidly and many pollutants could interfere with normal development
Elderly	<ul style="list-style-type: none"> - body may be nearly full after lifetime of exposures - decreased ability to eliminate Oil-Chemical pollutants - more likely to have chronic health problems - likely taking more pharmaceutical drugs (Oil-Chemical products)

- Good work, everyone!
- There are more types of susceptible persons.
- ➔ Do any of you know anyone who has or had cancer? <CLICK>
- ➔ Or a chronic illness such as COPD or asthma? <CLICK>
- **People with chronic illnesses or pre-existing conditions** are more at-risk to exposure from pollutants because:
 - their bodies already weakened or worn out from dealing with being sick much of the time
 - pollutants may trigger cancers or bring cancers out of remission
 - pollutants may make pre-existing conditions worse like asthma, COPD, cardiovascular problems, blood disorders, seizures, and more
- **African Americans** are also more susceptible to pollutants because black people are more prone to cardiovascular problems and blood disorders that may be triggered or made worse by exposure to Oil-Chemical pollutants. We suspect most people of color are more susceptible to pollutants, but the science – and the standards – have not caught up yet.

12

“Dose plus host **makes the poison**”

12



12 - “Dose plus host makes the poison”

- What we are talking about is that “dose plus host makes the poison.” Simply put, some people are much more susceptible than others to Oil-Chemical pollutants.
- ➔ Think: Would you give a small child the same dose of cold medicine that you would take as an adult? Why or why not? (No, the same dose of medicine would be too much for a small body.)
- ➔ In this photo, we see the vent or smoke stack is the source of Oil-Chemical pollutants, and we know this means pollutants will be in the air and on surfaces. Who might be at higher risk from exposure? Adults? Or Children? Why?
 - Kids have smaller bodies, they breathe faster normally, and they breathe even faster when playing.
 - Kids are getting a higher **dose** per **body weight**, so are more at-risk of harmful effects than most adults.
- People who have a repeat exposure to the same pollutants often become more sensitive to subsequent exposures. Their bodies become intolerant and over-react to warn of the danger. In a hypersensitive reaction, symptoms are exaggerated. This is called **multiple chemical sensitivity** or TILT for Toxicant-Induced Loss of Tolerance.
- TILT is a two-step process. First, an at-risk, susceptible individual gets sick after a toxic exposure or exposures. Then, instead of recovering, the neurological and immune systems remain damaged, and the individual fails to get well. The person begins to lose tolerance to a wide range of chemicals common in everyday life. Once you become intolerant, you are never “whole” in the same way again.

13

Environmental Justice stressors & health risk

13



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Discrimination

- Sacrifice zone
- Stress affects health
- Citizenship status

Income

- Proximity to industry, traffic, hazardous sites
- Meaningful political voice
- Access to health care, nutritional food
- Quality of education



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ALERT

13 - Environmental justice stressors and health risk

- ➔ First, could someone explain what “environmental justice” is? (the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to development, implementation, and enforcement of environmental laws, regulations, and policies)
- ➔ How might **income inequity** influence a person’s susceptibility to Oil-Chemical exposures? (After discussion <CLICK> to reveal some answers.)
 - Proximity to industry, traffic, hazardous waste sites, landfills, etc., increases health risks.
 - Income influences political power and access to decision-makers who can address your concerns.
 - Access to health care and nutritional food decreases health risk.
 - Access to a good education decreases health risk, as people understand the connection between health and other factors like nutrition, health care, and environmental health hazards.
- ➔ How might **discrimination** increase a person’s health risk?
 - <CLICK> Fence-line communities often have a high number of people of color and/or low income. These **Sacrifice Zones** are areas of poor environmental quality and low economic investment.
 - Discrimination elevates stress; stress affects physical, mental, and emotional health
 - Citizenship status—migrant field workers are at higher health risk of Oil-Chemical exposures.
- <CLICK> **Where you live matters!** In the United States, the main indicator of a person’s health is their zip code! However, even within zip codes, there are often Environmental Justice issues.

14



14 - Air quality scenarios

- Let's take a few minutes to use what we've just learned. We're going to listen to a STORY shown in these photos. Listen for **clues** about Oil-Chemical **exposures** and **unsafe practices**. After the STORY, let's work through some questions together.

In 2013, an ExxonMobil pipeline ruptured in Mayflower, Arkansas, spilling over 210,000 gallons of "dilbit" into a wetlands and neighborhood. Dilbit is mixture of **tar sands oil** mixed with dangerous chemical **diluents** used to thin the thick oil. The Oil-Chemical mixture flowed down a street and into storm drains before it was contained.

Twenty-two homes were evacuated along the street-front that was oiled. Neighbors on adjacent blocks and nearby also complained of the "horrible smell" but were not evacuated. Many of the neighbors became sick with cold and flu-like symptoms, bad headaches, and nausea. The same week as the spill, several children at the nearby Mayflower Elementary School became sick and threw up. EPA and state officials said air quality levels presented "no risk" to people in the neighborhood or at the school, based on federal air quality standards.

Three years later, a park has replaced 3 homes that were destroyed, because of oil under their foundations. Many of the other 60 homes in the Northwoods subdivision have been purchased by Exxon, remain vacant, or are up for sale. After hard rains, water pools in the grass: The water still has an oily sheen, and the air has a foul smell.

- ➔ Where did the oil go?
 - air • wetlands • stormwater • nearby waterbodies because stormwater is not treated

- ➔ Why should neighbors on adjacent blocks have been evacuated?
 - because they also complained of smell and got sick; they were not safe from exposures
- ➔ Why might children at the elementary school have become sick but not teachers?
 - small, young children are more sensitive to pollutants than most adults
 - teachers may not have lived in community and were not as susceptible as kids
- ➔ Why did Exxon offer to purchase the 22 homes that were evacuated? Any ideas?
 - Home structures and furnishings absorb Oil-Chemical pollutants from the environment and were a potential liability for Exxon. It was cheaper for Exxon to purchase homes than to pay for lifelong health care for people who lived in these homes.
- There are several unsafe practices in this story. <CLICK> First, under very old maritime law, only people whose property was physically oiled were compensated for losses. This law still applies to oil spills on the water or on land, but does not include oil contaminants in the AIR that harm health.
- Next, agencies can only take enforcement action if standards are exceeded. This means that the agencies cannot take action when people get sick during Oil-Chemical disaster, if people get sick below the levels currently accepted as “safe”. What we need are “evidence-based standards,” so that if people get sick during a disaster response, agencies can take action to get people out of harm’s way.
- Last, people have a right-to-know where and what is going through their neighborhoods. People in Kalamazoo had no idea there was a major oil pipeline so close to their homes and church.
- Strengthening local and national policies to better protect people from Oil-Chemical exposures is one of the goals of the Toxic Trespass training series.

15



Why is this important? [Listen...](#)

15



Gulf Coast communities
www.SBspillactnow.org

ALERT

15 - Why is this important? Listen ...

- We're going to watch a 5-minute clip from the film, "The Rising," about health exposures and health effects from the BP oil disaster and use of toxic, oil-based, chemical **dispersants**.
- The federal government currently allows oil companies to use dispersants in response efforts. Studies from the BP disaster have found that dispersants do more harm than good to people and wildlife. Listen to stories of people who live with the consequences of these government policies. <CLICK> **View film**
- ➔ After film, invite people to share their thoughts about the film clip.
- Dispersants are mostly oil-based, industrial solvents that are mixed with other chemicals and some surfactants. The Corexit dispersants used during the BP disaster response contain ingredients that are • neurotoxins • mutagens that cause tumors • carcinogens that cause cancer • endocrine disruptors that disrupt hormone function • teratogens (ter-at-e-jens) that disrupt the growth and development of babies in the womb • and that cause hemolysis (hee-muh-lie-sis) or rupture and death of red blood cells.
- The spiller is not held liable for damage to people or wildlife, because the federal government currently authorizes use of these toxic chemicals during spill response. There is a nationwide effort to ban toxic dispersants in spill response. (See resources: www.alertproject.org)
- This is extremely relevant nationwide, because the diluents used to thin tar sands oil for shipping, and the chemical fluids used in fracking activities to extract oil from shale rocks, are also oil-based industrial solvents very similar to dispersants. The same properties that allow these solvents to penetrate, thin, and dissolve oil also make it easier for them to move through cell walls, skin barriers and underlying skin layers, membranes that protect vital organs, and surfaces of eyes, nose, and mouths.

16



Temporary jobs = vulnerable

16



BP Deepwater Horizon



Enbridge spill, Michigan

- No pre-hire screening
- Inadequate training
- No respirators
- Standards outdated
- Take-home exposures

ALERT

16 - Temporary jobs = more at-risk

- Often in larger Oil-Chemical spill or releases, companies hire contract workers for temporary cleanup jobs. The work is dirty and dangerous.
- Here are STORIES are from two different places. Listen for CLUES why **contract workers** may be **more at-risk** than oil-company employees to Oil-Chemical exposures.

Several hundred people from the African American community of Benndale, Mississippi, hired on for beach cleanup during the 2010 BP Deepwater Horizon disaster response. Contract workers received no health screening for pre-existing conditions. Contract workers received only 4 hours of safety training instead of 40 hours required for hazardous waste cleanups. Contract workers were not well informed about Oil-Chemical hazards or symptoms of exposure. They were either not given respirators or told that using them would “be an act of job termination”. When contract workers became sick, they were diagnosed with “heat stress” for dizziness, “food poisoning” for nausea, “MRSA” (“mer-sa,” a bacterial infection) for skin lesions, or the “BP Syndrome” for non-specific cold and flu-like symptoms. When these contract workers returned home and washed job-site clothes, their families also became sick.

A similar story unfolded in Kalamazoo, Michigan, during the Enbridge tar sands Oil-Chemical disaster. Contract workers and the general public were told levels of Oil-Chemicals in the air did not exceed federal safety standards. However, <CLICK> EPA employees wore respirators when sampling air quality. Contract workers were not given respirators even for the most dangerous exposures – like wading in the river, close to the oil fumes!

TOXIC TRESPASS


INSTRUCTIONS: Guide open group discussion.

- ➔ Give examples to explain why contract workers were more at-risk than employees.
 - no pre-screening for health issues: workers with pre-existing issues are more at risk
 - workers not well informed of job-related health hazards: workers unaware that their symptoms might have been from Oil-Chemical pollutants, not “colds and flu” viruses
 - no respirators for main exposure pathway: workers forced to risk health for job
 - standards are not protective: workers believed job-site was safe when it wasn’t
 - no follow up health care; lot of contract labor is transient workforce, so illness and injury data are not collected or there is no central database
 - <CLICK> to view answer box
- ➔ Who were the most susceptible people in these stories?
 - contract workers in general because of inadequate screening and training
 - Workers of Color in particular because of predisposition to illnesses that are triggered or worsened by Oil-Chemical exposures
 - family members who became sick from “take-home exposures;” i.e., pollutants that come home from job site with workers and contaminate indoor airspace

The REST OF THE STORY is that six years later, many of these contract workers and family members are still sick and unable to get treatment for work-related Oil-Chemical illnesses. The BP medical benefits settlement excludes compensation for people living more than one-half mile from the beaches. (Benndale is 150 miles inland.) There was no similar settlement for the Michigan contract workers.


- ➔ Has anyone ever heard of a cold or flu lasting 6 years? Or heat stress? Nausea? Skin rash caused by the MRSA-bacteria looks very different from lesions caused by chemicals. Follow up health care and monitoring for contract workers after initial diagnosis would likely show prevalent, work-related, Oil-Chemical illnesses among contract workers. This would create a huge liability for oil companies.

17



17

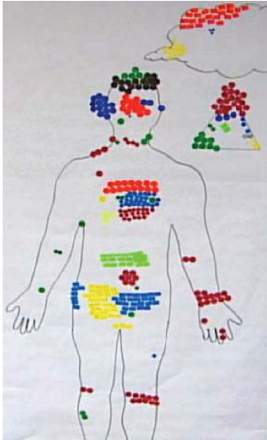
Chronic & multiple exposures



Sarnia, Ottawa, CANADA
The Beloved Community www.newsreel.com

Health survey & body mapping project

Blood
Brain
Cardiovascular
Gastro-intestinal
Kidney
Liver
Nervous
Reproductive
Respiratory
Skin
Systemic



ALERT

17 - Chronic and multiple exposures

- ➔ Many Oil-Chemical pollutants are “**endocrine disruptors**.” The harm to health is not initially evident. It can take months or years to realize. This is because:
 - <CLICK> interfere with the body’s endocrine (**hormone**) system – these chemicals are called “gender benders,”
 - <CLICK> jam reproductive function,
 - <CLICK> cause birth defects and developmental disorders and
 - <CLICK> lots of other problems like neurological diseases • immune system problems and • cancerous tumors in both humans and wildlife
- This STORY is about the “Houston” of Canada. It shows why long-term or **chronic exposures** to endocrine disruptors and **multiple exposures** to many different pollutants, at one time or over time, are so dangerous.

The Aamjiwnaang (AHM-ji-nung) band members of the Ojibwe (oh-JIB-way) Tribe have lived on the St. Claire River between Lake Huron and Lake Erie for over 6,000 years. Aamjiwnaang is both the Band’s name and a location. The city of Sarnia near the main population of Aamjinaang now hosts 40 percent of Canada’s petrochemical industry. There are 62 Oil-Chemical plants within 10 miles of the Aamjiwnaang Tribe.

Alarmed by increasing high numbers of illnesses, children with disabilities, and reproductive problems, the Band’s Health and Environment Committee conducted <CLICK> a health survey and body-mapping project in 2004. Participants described health issues that were recorded with different color dots near affected body organs. Trouble concentrating and other memory issues were indicated in this cloud over the head. Results were compiled by male, female, and child.

TOXIC TRESPASS

The Band learned that:

- Beginning in 1993–94, girl babies at the Aamjiwnaang First Nation site near Sarnia began to outnumber boys. During the next decade, twice as many girls were born as boys.
- 39% of the women at Aamjiwnaang over the age of 18 have had at least one miscarriage or stillbirth. This compares to 25% in the general population.
- The rate of learning disabilities in children at Aamjiwnaang is 23%; Canada's average is 4%.

INSTRUCTIONS: Guide **open discussion** using questions to prompt answers.

- ➔ Why might long-term or chronic exposures be more dangerous than short-term exposures? Use evidence from this story. Hint: Use the rain-barrel analogy. In a constant exposure scenario, is there a chance to empty the rain barrel?
 - A body constantly exposed is always absorbing Oil-Chemical pollutants from the environment. It fills up faster than it empties. Oil-Chemical pollutants build up in the body over time. This leads to illnesses.
- ➔ Why is chronic exposure of a pregnant mother to endocrine disruptors very harmful to a developing baby?
 - Constant exposure means a baby will be exposed throughout development.
 - Many endocrine disruptors interfere with growth and development; exposure could cause long-term health and developmental issues in children.
- ➔ Let's think about **multiple exposures**: Do you think people – especially those in fence-line communities – are exposed to only one chemical at a time?

(No! People are exposed to many different types of Oil-Chemical pollutants at the same time • or over a period of time. Crude oil is even a mixture of many different hydrocarbons like oil volatiles, oil particulates, and oil sludge.

 - Pollutants often target the same body organs and disrupt the same body functions. This double-whammy makes multiple Oil-Chemical exposures much more dangerous than exposures to a single pollutant. It's like 1 plus 1 equals 6, not 2.
 - Another reason why multiple Oil-Chemical exposures are more dangerous is that safety standards are based on exposures to single Oil-Chemical pollutants—or single hydrocarbons in crude oil. It's really small wonder that people get sick below levels thought to be “safe” or an acceptable risk.

THE REST OF THIS STORY is that the Aamjiwnaang health survey and body-mapping project attracted international attention and launched efforts to reduce air pollution. According to Canadian health officials, in 2013 there were no smog days and good to very good rated air quality 93 percent of the year.

- ➔ If the people can do this in Sarnia, why not here? The Toxic Trespass training series is meant to inspire and empower people to take similar actions in their own communities.

18

Reducing community Oil-Chemical exposures

18




18 - Reducing Oil-Chemical body exposures

- Reducing community Oil-Chemical exposures happens when people work together. It happens with <CLICK> • **mapping** • **monitoring** • **meetings**
- The Toxic Trespass series offers trainings in mapping and monitoring—and on improving local and national policies and plans to better protect workers and the general public from Oil-Chemical exposures.
- These trainings are designed to build capacity within communities by working with and supporting local organizations and coalitions.
- To support this effort:
 - Join or support local organizations that are working to reduce Oil-Chemical exposures in your community
 - Become a trainer and give trainings in your and other communities
 - Tell others about these trainings – family, neighbors, co-workers, teachers, church groups, and others
 - Where do Americans spend most of their time? Outdoors? Or indoors?
Indoors! At home, school, work, church, or businesses.

19

19

Reducing indoor Oil-Chemical exposures

		
Inhalation	Drinking	
	Eating	
Skin contact		

Photos: Creative Commons

19 - Reducing indoor Oil-Chemical exposures

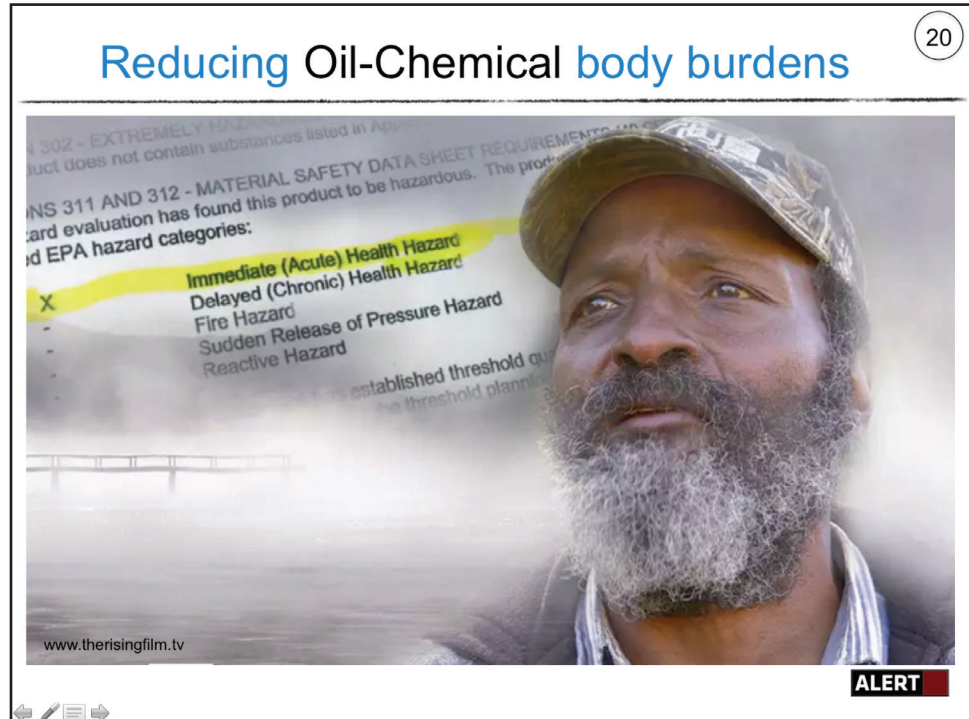
- The load of Oil-Chemical pollutants in a body is known as the “**body burden**.” There are ways to reduce Oil-Chemical pollutants in a body. The easiest way to start is to reduce indoor exposures by making different choices – at home, schools, and work. Let’s work with the routes of exposure.

INSTRUCTIONS: Guide **open discussion**; drop hints to get people to think of these and other answers.

- ➔ **Inhalation** <CLICK>: What are ways to improve indoor air quality by reducing some common sources of Oil-Chemical pollutants? Say you are remodeling or rebuilding, what choices might you make?
 - ➔ Construction materials: Research options and know your products. For example, Chinese dry wall off-gases toxic pollutants for years.
 - ➔ Wallpaper, paint, glue in carpets, rubber mats, new carpets all emit VOCs. Choose products that don’t emit VOCs.
 - ➔ Furniture: Particleboard products emit VOCs and formaldehyde. Allow new products to off-gas outside before bringing them into your home.
 - ➔ Furnishings and clothing: Avoid products with flame-retardant and stain repellent or ones that need dry-cleaning. Wash before use as a lot of fabric dyes are set with formaldehyde.
 - ➔ Furnace (if you have one): Service once a year to reduce VOC and PAH emissions.
 - ➔ Yard products: Be aware of “take-home exposures;” buy products with non-toxic ingredients.
 - ➔ Shelter-in-place emergencies: Install air filtration systems at school and work to protect people from breathing outside air.

- ➔ Avoid products like scented candles, air fresheners, moth balls, and incense.
- ➔ <CLICK> **Drinking water** <CLICK> What are ways to reduce pollutants in our drinking water?
 - ➔ A simple water filter will eliminate chlorine and many other pollutants from tap water.
 - ➔ Install an inline water filter system. Use filtered water for coffee, tea, and cooking.
 - ➔ <CLICK> Use stainless REFILLABLE water bottles. Install water refill stations at schools, work, and other places.
 - ➔ Don't buy or use bottled water. It's not well-regulated; bottled water is often tap water; the water leaches pollutants from the plastic; and mountains of plastic water bottles end up in landfills.
- ➔ <CLICK> **Skin contact** <CLICK> What are ways to reduce our skin contact with Oil-Chemical pollutants?
 - ➔ Personal care products: Read product labels. Avoid products with ingredients like parabens and phthalates in shampoos • cosmetics • sunscreen • body soap and more.
 - ➔ Cleaning products: Buy products with natural ingredients for dish soap • laundry soap • floor cleaners • rug cleaners • window cleaners • and more.
 - ➔ Clothes and bedding: Buy products with natural fabrics. Wash before use with non-toxic laundry soaps.
- ➔ <CLICK> **Eating food** <CLICK> What are some ways to reduce Oil-Chemical pollutants in your food?
 - ➔ Grow or buy locally-grown, organic food. In fence-line communities, use raised beds with clean soil; construct hoop greenhouses to protect soil and produce from air pollutants. Wash produce with filtered water.
 - ➔ <CLICK> Cook meals at home more often. Use stainless steel or cast iron pots, not aluminum or teflon. Ceramic pots and pans are fine.
 - ➔ Read labels and don't buy products that have ingredients you don't recognize.
 - ➔ Reduce consumption of sugar and diet sodas as sugar weakens immune system function.
 - <CLICK> to restore original slide after discussion
- ➔ **Electro-magnetic radiation:** What are ways to reduce EMF exposures?
 - ➔ Cell phones: Use ear buds or speaker; don't hold phone close to your head. Use shielding devices.
 - ➔ Electronic devices: Plug into power strip and turn it off or unplug at night.
 - ➔ Wifi: Turn off at night.

20



20 - Reducing Oil-Chemical body burdens

- If you don't help your body reduce its body burden – its load – of Oil-Chemical pollutants, your body will continue to fill up with pollutants. <CLICK> When our bodies have too many pollutants—we get sick. Our bodies accumulate pollutants every day, we should do a regular chemical detox program every day <CLICK> especially in fence-line communities or during an oil or chemical disaster.
- ➔ **Get informed:** <CLICK> What are the likely sources of Oil-Chemical pollutants in your main environments? How can you avoid or reduce exposures?
- ➔ **Practice self care:** Choose routines that will fit into your lifestyle. For example:
 - ➔ Stay hydrated: drink lots of filtered water.
 - ➔ Ensure balanced nutrition, including fresh fruits and vegetables, and nutritional supplements
 - ➔ Engage in moderate daily exercise.
 - ➔ Eliminate excessive use of caffeine, alcohol, tobacco products, and processed foods.
- ➔ **Detoxification methods** for daily balance (not life-threatening exposures) include:
 - Cleansing baths, soaks, and sweats: hot water soaks in Epsom salts and baking soda draw pollutants out of the body, as do ionic footbaths and infrared or regular saunas. Use herbal preparations and essential oils.
 - Mindful practice: Learn to manage stress as it contributes to many illnesses. Meditation, yoga, and massage all help reduce stress. Learn what works best for you – gardening, visiting friends, walking in nature. Unplug every day.
- ➔ **Seek medical treatment:** If you believe you are ill from Oil-Chemical exposures, or are interested in detoxing from chronic pollutant exposures, visit a qualified health care provider.

21

Talking with your doctor

21



PREPARE FOR YOUR VISIT

- Is your doctor OEM-qualified?
- Know your & your family's health history
- Know your & your family's exposure history & symptoms
- Be informed about tests & treatments

- Talk with your neighbors – who else in your community has similar health issues? Who is their doctor? Results?
- Believe in yourself – Get a second opinion or a referral to a specialist if your doctor does not understand what is causing your symptoms

ALERT

21 - Talking with your Health Care Provider

- Occupational Safety and Health Medicine is a specialty field of medicine that focuses on the relationship of health and disease to environmental health hazards. Not all Health Care Professionals (HCPs) are trained in this field. Find out if yours is. *This is important!*
- Treatment for illnesses caused by biological pathogens or allergies will not work for illnesses caused by Oil-Chemical pollutants. It will only mask symptoms. Oil-Chemical pollutants need to be pulled out of your body in ways that do not cause further harm.
- Prepare for your visit with your health care provider. Refer to the learning guide for how to do this.

Know your and your family's health and exposure history <CLICK>

- Include exposures your parents may have had, previous exposures at home, work, etc.
- <CLICK> Document where, when, what, and for how long you have been exposed.
- Keep track of your symptoms: Record what makes your symptoms worse or better.

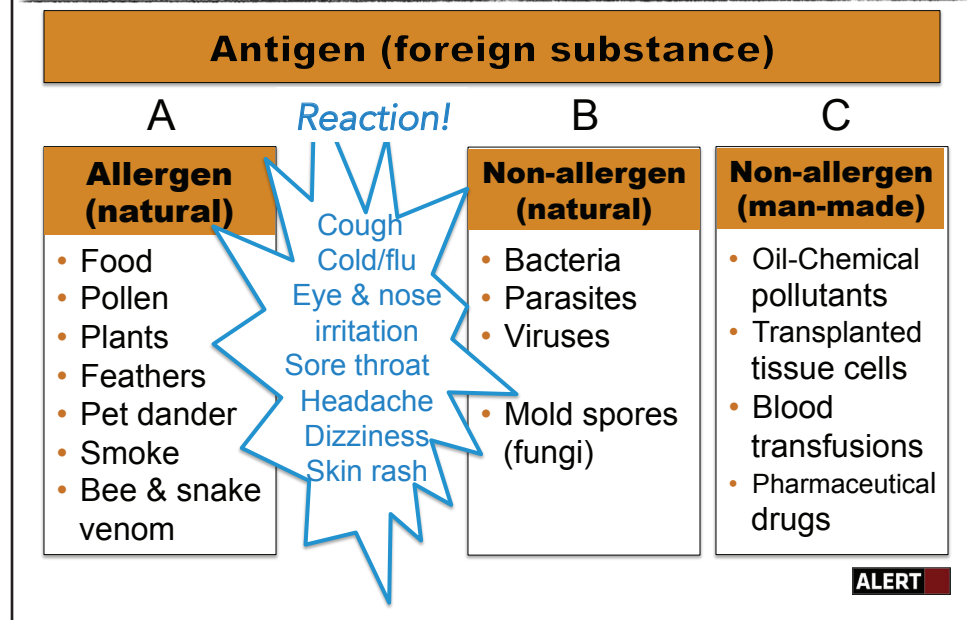
Educate yourself

- <CLICK> Be informed about tests and treatments. Do your own research, and check your sources.
- <CLICK> Talk to your neighbors: Are others suffering from comparable complaints?

Believe in yourself <CLICK>

- Your HCP, friends, or family may question if you are very ill.
- Get a second opinion: If your HCP does not understand what is causing your problems, find another one. Ask for a referral to an OSEH.

Understanding immune system response 22



22 - Understanding immune system response

- Our bodies are constantly on the alert for foreign substances entering it. Some foreign substances, called *antigens*, cause your immune system to produce *antibodies*, which could lead to a hypersensitive reaction.
- <CLICK> Initial symptoms of this reaction may include congestion, coughing, sore throat, severe headache, vertigo (dizziness), or a skin rash.
- <CLICK> Hypersensitive or “allergic” reactions could be caused by an allergen or a non-allergen. Understanding the difference is critical for proper diagnosis and health care.
- An *allergen* is a natural substance that may or may not be harmful. <CLICK> Examples are pollen, plants, smoke, feathers, food (but not the chemicals in or on the food), animal dander, and insect or snake venom (A).
- A *non-allergen* is an antigen that could cause an infection or an illness. We will focus on two types. <CLICK> Examples of naturally-occurring antigens that cause infections are viruses, parasites, bacteria, or mold spores (fungi) (B).
- ➔ <CLICK> Examples of man-made antigens that cause illnesses are Oil-Chemical pollutants, transplanted tissue cells, blood transfusions, and pharmaceutical drugs (C).
- ➔ Our body only has so many ways to warn of danger. You and your health care provider have to look for clues to determine the cause of your symptoms, in order for you to be correctly diagnosed and successfully treated.
 - ➔ Why do you think this is so?
 - ➔ (Allow discussion. Hint: Do you think treatment for a snake bite or bee sting is the same as treatment for a virus? Or treatment for a viral infection is the same as for an Oil-Chemical illness? Why or why not?)

- This is why you and your family's medical history and exposure history are important. These documents provide important clues to you and your health care provider.
- This is also why your choice of health care providers is important.
 - Many health care providers in the United States have not been trained in environmental medicine.
 - They might not know to look for chemical causes for your symptoms.
 - They might not know that chemical illnesses cannot be successfully treated using antibiotics, skin crèmes, or other products designed to treat allergies or infections caused by natural substances.
 - A misdiagnosis could lead to much frustration and debilitating, chronic disease.
- We developed the Toxic Trespass Learning Guide as an educational tool towards better health and wellbeing. The next steps are up to you and your health care provider.

Test scenario #1

23



23 - Test scenario #1

- We're almost done! There are three test scenarios with questions. Two scenarios are like the STORIES we heard and the third scenario is like the FILM we watched. In this first scenario, listen for exposure sources, routes of exposure, at-risk people, and symptoms. Then we will work through the questions together.

SCENARIO: We've lived in fence-line community since before my 3 children were born. My oldest is eight. We live right across from that refinery that had a chemical spill last weekend. During the spill, my mother and oldest child were at the park at my girl's soccer game. They came home right after the game because my mother had a bad headache and my girl had a cough. Now both have the flu. I want to ask my doctor if my mother and child are sick because of the upset.

- ➔ Test question: I want to know: <CLICK> What will my doctor need to know? Why?

INSTRUCTIONS: Guide **open discussion**, using questions for prompts and chart for answers.

General information

- ➔ In preparing for a visit with your health care provider, what is the first thing that you should find out?
- ➔ What information would you bring to your HCP?

Specific to this visit

- ➔ What is the source of environmental health hazards of concern in this story?
- ➔ What are the likely routes of exposure?
- ➔ Were people in the park downwind from the refinery? (potential exposures)

- ➔ Why do you think your mother and daughter were exposed? (see symptoms and supporting evidence)
 - ➔ Based on this information, what would be a reasonable course of action for your health care provider to recommend? Why? (see chart)
- Good job, everyone!

General information	Why?
<ul style="list-style-type: none"> – qualifications – health history – previous exposure history 	<ul style="list-style-type: none"> – HCP's qualifications to treat Oil-Chemical illnesses – HCP's qualifications to treat Oil-Chemical illnesses – who was exposed to what, when?
Specific to this visit	Why?
Source of pollutants <ul style="list-style-type: none"> – fence-line community – spill at refinery 	<ul style="list-style-type: none"> – dealing with chronic and multiple Oil-Chemical exposures – release of more chemicals than usual daily activities – chemicals that were released (if known)
Routes of exposure <ul style="list-style-type: none"> – inhalation from air – location of homes & park; i.e., downwind? 	<ul style="list-style-type: none"> – people outdoors during spill may have higher exposures – people indoors & downwind may have been exposed
Symptoms <ul style="list-style-type: none"> – bad headache, cough – bad flu 	<ul style="list-style-type: none"> – could be early symptoms of Oil-Chemical exposure – also could be symptom of Oil-Chemical exposure
Supporting evidence <ul style="list-style-type: none"> – susceptible individuals – other sick people? 	<ul style="list-style-type: none"> – child: outdoors during release and actively exercising – elderly: outdoors during release – neighbors or other people at park during release; other school children (to rule out a virus from school kids) – if others are sick, do they have similar symptoms?
Course of Action	Why?
<ul style="list-style-type: none"> – treat biological symptoms – research – if symptoms don't clear... 	<ul style="list-style-type: none"> – to see if symptoms clear – gather info on chemicals of concern and health impacts – treat for chemical illnesses or refer to a specialist with Occupational Safety and Environmental Health training

Test scenario #2

24



24 - Test scenario #2

-
- In the second scenario, listen for **routes of exposure**, **at-risk people**, and **symptoms** – including **endocrine disruption**. Then we'll work through questions together.

SCENARIO: We've always lived in a fence-line community. My daughter works at the refinery and she's a trained first responder. During that spill and fire at the refinery a year ago, my daughter was right there to help. My son was one of the first people hired as a contract worker for the cleanup. He had some job training, but nothing like my daughter's training. My daughter is fine, but my son has been real tired since the cleanup and he gets sick all the time. He and his wife are trying to have another baby but they are having trouble getting pregnant.

➔ I want to help my son: <CLICK> What will my son's doctor need to know? Why?

INSTRUCTION: Guide open discussion, using questions for prompts and chart for answers.

General information

- ➔ In preparing for a visit with a health care provider, what is the first thing that you should find out?
- ➔ What information would your son bring to his HCP? Include son's wife's health and exposure history!

Specific to this visit

- ➔ What is the source of environmental health hazards of concern in this story?
- ➔ What are the likely routes of exposure?
- ➔ What are the symptoms a year later? Were there acute (initial) symptoms during the response?
- ➔ Who are the at-risk individuals in this story? There are at least five types!

- ➔ Collect examples of evidence to support claim of chemical illness such as:
 - ➔ Find out differences between the daughter's training and use of Personal Protective Equipment (PPE) as a company employee and trained first responder versus the son's training and use of PPE as a contract worker: What are likely differences?
 - ➔ Did any other people get sick during this event? (Employees, responders, residents)
 - ➔ What is the couple's history with previous pregnancies?
 - ➔ Based on this information, what would be a reasonable course of action for your health care provider to recommend? Why? (see chart)
 - ➔ Why is it important to monitor health of sick workers after an event? (for correct diagnosis and treatment; e.g., colds and flu clear up in a week while chemical illnesses persist)
- Good job, everyone!

General information	Why?
<ul style="list-style-type: none"> – qualifications – health history – previous exposure history 	<ul style="list-style-type: none"> – HCP’s qualifications to treat Oil-Chemical illnesses – HCP’s qualifications to treat Oil-Chemical illnesses – who was exposed to what, when?
Specific to this visit	Why?
Source of pollutants <ul style="list-style-type: none"> – fence-line community – spill and fire at refinery 	<ul style="list-style-type: none"> – dealing with chronic and multiple Oil-Chemical exposures – release of more Oil-Chemicals than usual daily activities – type of oil and chemicals that were released (if known)
Routes of exposure <ul style="list-style-type: none"> – inhalation from air – skin contact – eating food on-site 	<ul style="list-style-type: none"> – workers without respirators may have higher exposures – workers without proper protection may have been exposed – workers with unclean hands may have contaminated food
Symptoms <ul style="list-style-type: none"> – chronic symptoms – acute symptoms from initial event 	<ul style="list-style-type: none"> – tired all the time and difficulties getting pregnant could be symptoms of Oil-Chemical exposure – could be supporting evidence of Oil-Chemical exposure
At-risk individuals <ul style="list-style-type: none"> – first responders – contract workers – onsite refinery employees – son’s wife – community residents 	<ul style="list-style-type: none"> – Screened for pre-existing illnesses? Received minimum 40-hour HAZWOPER training in appropriate language? Given and used proper PPE for response? Given health monitoring after event? – Evacuated? Shelter-in-place? – at-risk from take-home exposures – from fence-line exposures and possible disposal of hazardous Oil-Chemical wastes in community landfill
Supporting evidence <ul style="list-style-type: none"> – workers – community residents – couple’s previous pregnancies 	<ul style="list-style-type: none"> – Did any company employees, first responders, or other contract workers get sick after spill and fire? Symptoms? Treating HCP? – Did any residents get sick after event? Symptoms? HCP? – How many children does son, wife, and couple have? – Any trouble with these pregnancies? – Any children conceived and born after son’s cleanup work?
Course of Action	Why?
<ul style="list-style-type: none"> – chemical detox program – research – if problems persist ... 	<ul style="list-style-type: none"> – with specialist trained in OSEH – gather info on chemicals of concern and health impacts – referral to or consult an OB-GYN specialist

25

Why is this important? [Answer...](#)

25



Canada communities
www.ToxicTrespass.com

ALERT

25 - Test scenario #3

INSTRUCTIONS: We're going to watch a 5-minute trailer to a film about a Canadian film-maker, her 10-year old daughter, and three fence-line communities in Canada—Aamjiwnaang, Sarnia, and Windsor. Just listen.

- After the film, we'll share some reflections.
 - <CLICK> to view film
-
- ➔ Ask for reflections.
 - ➔ How has this training increased your understanding of issues raised in this film clip?
 - Other ideas for discussion if needed:
 - ➔ Should chemicals with “no known safe concentration” be released into our environment?
 - ➔ Should industry be allowed to sacrifice people's health and entire communities for profit?
 - ➔ What is the government's responsibility to safeguard people's health?
 - ➔ How can we hold the government accountable?

26

TOXIC TRESPASS

26

What's next?

local trainer

email@address

local trainer

email@address

ALERT

Emily Harris

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ALERT

Riki Ott

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26 - What's Next?

- Please take time to fill out your evaluations. Your comments help us improve this training. We really read them!
- Remember there are more workshops in this series. If any of you are interested in becoming a Trainer and working with us to prepare material for your community, please come and speak with us or contact us – after you have filled out your evaluations.
- Thank you all for attending this training!

Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
BTEX	(be-TEX) Benzene, Toluene, Ethylbenzene, and Xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COPD	Chronic Obstructive Pulmonary Disease
COSH	Council of Occupational Safety and Health
CWA	Clean Water Act
DDT	dichloro diphenyl trichloroethane
dilbit	diluted bitumen
EJ	environmental justice
EMR	Electro-Magnetic Radiation
EPA	Environmental Protection Agency
HAZWOPER	Hazardous Waste Operations and Emergency Response
HCP	Health Care Professional or Provider
ICD	International Classification of Disease
IgE	Immunoglobulin E
IMID	Immune-Mediated Inflammatory Disease
MCS	Multiple Chemical Sensitivity
MTBE	methyl tert-butyl ether
NTSB	National Transportation Safety Board
OSEM	Occupational Safety and Environmental Medicine
PAHs	polycyclic aromatic hydrocarbons
PBT	Persistent Bioaccumulative Toxic (chemical)
PCBs	polychlorinated biphenyls
POPs	Persistent Organic Pollutants
PPE	Personal Protective Equipment
PTSD	Post Traumatic Stress Disorder
RTECS	Registry of Toxic Effects of Chemical Substances
TILT	Toxicant-Induced Loss of Tolerance
TSCA	Toxic Substances Control Act
UST	Underground Storage Tanks
VOCs	Volatile Organic Compounds

Definitions

allergen: a natural substance that causes your immune system to produce antibodies and may lead to an allergic reaction; the substance may or may not be harmful; examples are pollen, plants, smoke, feathers, food (but not chemicals in or on food), animal dander, and insect or snake venom. See *antibody*, *antigen*, *anti-histamine*, *food allergy*, *histamine*, and *non-food allergy*.

antibody: a blood protein produced by the body in response to and to counteract a specific antigen; these proteins combine chemically with substances that the body recognizes as foreign such as bacteria, viruses, insect or snake venom, or Oil-Chemical pollutants in the blood. See *antigen* and *Oil-Chemical pollutants*.

antigen: any foreign substance that causes your immune system to produce antibodies, leading to an immune reaction(s); some types of antigens (allergens) may cause an allergic reaction, while other types (non-allergens) may cause infections and illnesses. See *allergen* and *non-allergen*.

anti-histamine: compounds that are produced by the human body, medicinal plants, or as pharmaceutical drugs to block the physiological effects of histamine; these compounds may counter some antigens that produce allergic reactions, but not all. See *allergic*, *antigen*, *autoimmune disease*, *chronic disease*, *histamine*, *non-allergic*, and *Immune-Mediated Inflammatory Disease*.

autoimmune disease: an illness that occurs when body tissues are attacked by its own immune system. See *antigen*, *immune system*, *Immunoglobulin E*, *Immune-Mediated Inflammatory Disease*, and *non-allergen*.

benzene: a colorless, volatile, sweet-smelling, flammable, toxic, slightly water-soluble, liquid aromatic hydrocarbon, obtained chiefly from coal tar and petroleum; used in the manufacture of commercial and medicinal chemicals, dyes, and as a solvent for resins, fats, or the like; long-term exposure is known to cause anemia and leukemia

bioaccumulative: see *Persistent Bioaccumulative Toxic (PBT)* and *Persistent Organic Pollutants*.

BTEX: term used for benzene, toluene, ethylbenzene, and xylene Volatile Organic Compounds (VOCs) typically found in petroleum products, such as gasoline and diesel fuel; BTEX are the most soluble of the major gasoline compounds and so are common indicators of gasoline contamination

carcinogen: any substance or agent that tends to produce cancer

CERCLA: a United States federal law, commonly known as Superfund, designed to clean up sites contaminated with hazardous substances and pollutants other than any type of crude oil, refined oils

chemical intolerance: a non-IgE-mediated physiological response to drugs, food (and/or chemicals in food), and chemicals and other pollutants, in which the body does not produce IgE antibodies since IgE does not recognize the antigens causing the response; commonly misdiagnosed as a food allergy or psychological illness, which may lead to unsuccessful treatment and chronic disease. See *allergen*, *antigen*, *autoimmune disease*, *chemical sensitivity*, *chemical intolerance*, *chronic disease*, *food allergy*, *Immune-Mediated Inflammatory Disease*, *Immunoglobulin E (IgE)*, *non-food allergy*, *Occupational Safety and Environmental Health*, *OSEH*, *Oil-Chemical pollutants*, *pollutants*, and *Toxicant-Induced Loss of Tolerance*.

chemical sensitivity: a chronic disease that usually expresses as a syndrome or a collection of nonspecific symptoms that the affected person often attributes to exposures to pollutants in the environment; increasingly associated with chronic diseases, especially degenerative neurological diseases; now called “chemical intolerance” and best diagnosed and treated by people trained in environmental medicine fields such as Occupational Safety and Environmental Health, OSEH. See *Occupational Safety and Environmental Health*, *OSEH* and *Toxicant-Induced Loss of Tolerance*, *TILT*.

chem-trails: the classified, ongoing artificial modification of Earth’s climate systems using reflective nano-

materials (aerosols) to reflect sunlight; (not to be confused with contrails condensate water droplets or ice crystals that occur in the wake of an aircraft); chem-trail aerosols dispersed via jet aircraft expand into reflective artificial clouds. See also *geo-engineering*. www.skyderalert.com

chronic disease: a disease lasting 3 or more months; a disease that generally cannot be prevented by vaccines or cured by medication, nor does it just disappear. See *autoimmune disease*, *Immune-Mediated Inflammatory Disease*.

Clean Water Act: the primary federal law in the United States governing water pollution; Section 311 governs prevention of, and response to, oil spills and releases of hazardous substances to waters of the U.S.

COPD: a chronic lung disease that makes it difficult to breathe; includes chronic bronchitis and emphysema

crude oil: mixture of naturally occurring, unrefined petroleum hydrocarbons and other organic materials; can be refined into gasoline, diesel, heating oil, jet fuel, kerosene, and literally thousands of various forms of petrochemicals and products

dilbit: a mixture of tar sands oil (bitumen) and toxic oil-chemical solvents used to thin tar sands oil for transportation by pipeline or rail car. See *solvent*.

diluent: (dil-u-ent) substance used to dilute or thin something; in this case, refers to toxic oil-based solvents that are used to thin tar sands oil for transportation. See *solvent*.

dispersant: substance used to separate particles and prevent clumping; in this case, refers to toxic formulations of oil-based solvents, mixed with small amounts of surfactants, that are used to break up spilled oil into small droplets; it is not possible to contain and remove dispersed oil from the water. See *solvents* and *surfactants*.

Electro-Magnetic Radiation, EMR: radiation (energy) having both the form of electromagnetic waves and particles (photons) traveling at the speed of light; includes (from long to short wavelengths) radio waves (least harmful), microwaves, infrared, ultraviolet, x-rays, and gamma rays (most harmful)

endocrine disruptors: “gender bender” chemicals that may interfere with the body’s hormone (endocrine) system and cause harm such as developmental, reproductive, neurological, and immune problems in all beings including humans

environmental justice: the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to development, implementation, and enforcement of environmental laws, regulations, and policies

environmental medicine: the relationship of health and disease to environmental health hazards in the air, water, soil, food, building materials, and other products; focuses on the cause of disease in an environmental context, meaning indoor or outdoor exposures to biological, chemical, and other agents. See *antigen*, *autoimmune disease*, *chemical sensitivity*, *chemical intolerance*, *electro-magnetic radiation*, *Immune-Mediated Inflammatory Disease*, *Occupational Safety and Environmental Health*, *OSEH*, and *Oil-Chemical pollutants*.

fence-line community: a neighborhood that is immediately adjacent to a company and is directly affected by the Oil-Chemical emissions, odors, noise, traffic, parking, and operations of the company

food allergy: adverse reaction to food caused when your immune system overreacts by producing Immunoglobulin E, IgE, which travels to cells to release chemicals that may cause an allergic reaction; also known as IgE-mediated allergy. See *allergen*, *anti-histamine*, *histamine*, *Immunoglobulin E*, and *non-food allergy*.

geo-engineering: the artificial modification of Earth’s climate systems through primarily Solar Radiation Management (SRM) and Carbon Dioxide Removal (CDR). See also *chem-trails* <http://www.geoengineeringwatch.org/category/health/>

hazardous substance: defined differently under different laws; in this use means any substance or mixture of substances that is toxic to humans or wildlife, corrosive, flammable, combustible, and/or radioactive. See *pollutant*.

HAZWOPER: a set of guidelines produced and maintained by the Occupational Safety and Health Administration to regulate hazardous wastes and dangerous goods from inception to disposal in the United States and its territories

health risk: the probability or chance that exposure to a hazardous substance will damage the health of the exposed person

histamine: a hormone produced by certain cells in the brain as part of an immune response to injury and certain allergic and non-allergic antigens, causing inflammatory reactions; this hormone increases the permeability of the capillaries to white blood cells and some proteins, to allow them to engage the foreign substance in the infected tissues; hormone also causes contraction of smooth muscle tissue. See *allergic*, *antigen*, *anti-histamine*, *autoimmune disease*, *non-allergic*, and *Immune-Mediated Inflammatory Disease*.

Immune-Mediated Inflammatory Disease, IMID: any of a group of conditions or diseases for which the medical researchers do not yet understand the cause(s) or manner(s) of causation of the disease, and which are characterized by common inflammatory pathways leading to inflammation, and which may result from, or be triggered by, a malfunction of the normal immune response. See *allergen*, *antibody*, *antigen*, and *autoimmune disease*.

immune system: a complex organization within the body that is designed normally to “seek and destroy” foreign substances entering the body. See *antigens*.

Immunoglobulin E, IgE: antibodies produced by the immune system and associated with immediate hypersensitivity reactions. See *food allergy* and *non-food allergy*.

infectious disease: are caused by microorganisms such as bacteria, viruses, fungi or parasites; can be spread, directly or indirectly, from one person to another; some infectious diseases of animals can cause disease when transmitted to humans, e.g., rabies

International Classification of Diseases, ICD: a clinical cataloging system used by doctors and other health care providers to classify and code diagnoses, symptoms, and procedures recorded in conjunction with hospital care; the World Health Organization owns, develops, and publishes ICD codes, and national governments adopt the system; the most recent version is ICD-10, which was adopted in the United States on October 1, 2015

legacy pollutants: chemicals often used or produced by industry, which remain in the environment long after they were first introduced. See *persistent organic pollutants*.

MTBE: a volatile, flammable, and colorless liquid used as a gasoline additive to raise the octane number; it has polluted groundwater across the U.S., due to MTBE-containing gasoline being spilled or leaked at gas stations.

non-allergen: a type of antigen that could cause an infection or illness; examples of the former are viruses, parasites, bacteria, and mold spores (fungi); examples of the latter are Oil-Chemical pollutants, transplanted tissue cells, blood transfusions, and pharmaceutical drugs. See *allergen*, *antigen*, *non-food allergy*, and *Oil-Chemical pollutant*.

non-food allergy: adverse reaction caused when your immune system overacts, causing cells in your body to release chemicals that may produce an allergic reaction; also known as non-IgE-mediated allergy; this type of allergy is not caused by IgE antibodies; the cause(s) of the reaction are yet known, but are now suspected to be linked with pollutants in the environment. See *allergen*, *autoimmune disease*, *food allergy*, *Immune-Mediated Inflammatory Disease*, *Immunoglobulin E*, and *pollutant*.

Occupational Safety and Environmental Health, OSEH: a field of medicine that studies the relationship of health and disease to environmental health hazards in the context of human environments such as the work-place, home, and community. See also *chemical intolerance*, *chemical sensitivity* and *TILT*.

oil: greasy usually liquid substances from plant, animal, or mineral sources that do not dissolve in water and are used especially as lubricants, fuels, and food; as defined by the Clean Water Act, means oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil

Oil-Chemical pollutant: oil, oil-based chemicals, and/or chemicals that are a health risk. See *health risk* and *pollutant*.

ozone: a gas that occurs both in the earth's upper atmosphere and at ground level which protects all life from the sun's harmful radiation

parabens: chemicals widely used as preservatives in cosmetic and pharmaceutical products

Persistent Bioaccumulative Toxic (PBT): compounds that are highly resistant to breaking down in the environment ("persistent"); readily taken up by people and wildlife and build up to high levels in bodies ("bioaccumulate"); and poisonous ("toxic")

Persistent Organic Pollutants (POPs): organic compounds that are resistant to environmental degradation through chemical, biological, and photolytic processes; POPs bioaccumulate (build up in biological tissue) with potential significant impacts on human health and the environment.

Personal Protective Equipment: equipment worn to minimize exposure to serious workplace injuries and illnesses that may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards

petcoke: a toxic waste product of several distillation processes used to refine tar sands crude oil; when used as a fuel, it emits Greenhouse Gas pollutants on par with coal

petrochemical: substances obtained by the refining or processing of petroleum and natural gas; used to produce a wide variety of materials such as plastics, explosives, fertilizers, and synthetic fibers

phthalates: (THAH-lates) chemicals used to soften plastics such as vinyl, PVC, plastic containers, shower curtains, plastic wrap, and baby toys. See also *endocrine disruptors*.

pollutant: any health hazard which, after release into the environment and upon exposure, may cause death, disease or infection, behavioral abnormalities, cancer, genetic mutation, endocrine disruption, reproductive problems, and other physiological problems that disrupt body function in exposed organisms and their offspring – including humans; definition under CERCLA excludes oil of any kind or in any form

Polycyclic Aromatic Hydrocarbons, PAHs: a group of more than 100 different chemicals that are in, and released from burning coal, oil, gasoline, trash, tobacco, wood, or other organic substances such as charcoal-broiled meat; PAHs are usually found as a mixture containing two or more of these compounds, such as soot

Post Traumatic Stress Disorder: a condition of persistent mental and emotional stress occurring as a result of experiencing or witnessing a terrifying or disturbing event or a physical trauma

solvent: able to dissolve other substances; in this case, refers to oil-based chemicals that are a major ingredient of diluents and dispersants and that pose extreme health hazards to people and wildlife as solvents easily transfer across cell membranes of living organisms; health hazards associated with solvent exposure include toxicity to the nervous system, reproductive damage, liver and kidney damage, respiratory impairment, cancer, and dermatitis

surfactant: a substance that reduces the surface tension of the substance in which it is dissolved; in this case, refers to detergents, emulsifiers, foaming agents, and a minor ingredient in oil dispersants

Toxicant-Induced Loss of Tolerance, TILT: a two-step process in which an at-risk, susceptible individual gets sick after a toxic exposure or exposures and then, instead of recovering, the neurological and immune systems remain damaged, and the individual fails to get well; the sufferer begins to lose tolerance to a wide range of chemicals common in everyday life. See also *chemical intolerance*, *chemical sensitivity*, *OSEH*, and *toxicant*.

toxicant: a man-made poison

toxin: a naturally-occurring poison produced by living cells or organisms, such as spider venom

toxicology: (tox'-i-COL-ogy) the study of harmful effects of Oil-Chemical pollutants and other environmental health hazards on living organisms

Volatile Organic Compounds (VOCs): a variety of carbon-based chemicals that evaporate easily at room temperature and dissolve readily into water; VOCs are emitted by a wide array of products numbering in the thousands; many VOCs are toxic and contain known or suspected human carcinogens (cancer-causing substances)

RESOURCES BY SLIDE

3/ Why is this important? Listen

InsideClimate News:

2012, A dilbit primer: How it's different from conventional oil. <http://insideclimatenews.org/news/20120626/dilbit-primer-diluted-bitumen-conventional-oil-tar-sands-Alberta-Kalamazoo-Keystone-XL-Enbridge>

2015, Unique hazards of tar sands oil spills: <http://insideclimatenews.org/news/09122015/unique-hazards-tar-sands-oil-spills-dilbit-diluted-bitumen-confirmed-national-academies-of-science-kalamazoo-river-enbridge>

MDCH (Michigan Department of Community Health). 2010. Acute Health Effects of the Enbridge Oil Spill. Lansing, Michigan. November 2010 (Minor revisions 12/20/2010). http://www.michigan.gov/documents/mdch/enbridge_oil_spill_epi_report_with_cover_11_22_10_339101_7.pdf

5/ Types of environmental health hazards

greatest health hazard for humans: <http://www.worstpolluted.org/2012-press-release.html>

85,000 industrial chemicals: http://www.nytimes.com/2013/04/14/sunday-review/think-those-chemicals-have-been-tested.html?_r=0

petcoke: <http://www.nam.org/CRSreport/> and <http://priceofoil.org/content/uploads/2013/01/OCI.Petcoke.FINALSCREEN.pdf>

cell phones & children's health: <http://www.webmd.com/children/news/20140819/children-cell-phones>

cell phones & use restrictions in other countries for health concerns:

http://ehtrust.org/wp-content/uploads/2011/04/BriefingBookA_Edition0_1_Mar08N.pdf

<http://articles.mercola.com/sites/articles/archive/2012/01/19/health-canada-on-cell-phone-use-limitation.aspx>

cell towers: <http://www.anticelltowerlawyers.com/links/school-news.html>

electric & hybrid cars & radiation risks: <http://emfblues.com/car-radiation/>

electric & hybrid cars & safety standards: <http://www.saferemr.com/2014/07/shouldnt-hybrid-and-electric-cars-be-re.html>

shielding products to reduce EMR exposures: <http://www.lessemf.com/>

oil is naturally radioactive: <http://www.nytimes.com/1990/12/03/us/radiation-danger-found-in-oilfields-across-the-nation.html?pagewanted=all>

<http://www.nytimes.com/1990/12/24/us/2-suits-on-radium-cleanup-test-oil-industry-s-liability.html?pagewanted=1>

<http://www.ncbi.nlm.nih.gov/pubmed/25551500>

<https://ohsonline.com/Articles/2014/06/01/Technologically-Enhanced-Naturally-Occurring-Radioactive-Materials-on-Oil-and-Gas-Sites.aspx>

low level radiation exposure: <http://www.washingtonsblog.com/2015/10/world-health-organization-prolonged-exposure-to-even-low-level-radiation-increases-the-risk-of-dying-from-cancer.html>

chemtrails and geoengineering:

www.skyderalert.com

<http://www.geoengineeringwatch.org/category/health/>

6/ Why “Oil-Chemical” pollutants?

Clean Water Act definition of oil: <https://www.law.cornell.edu/uscode/text/33/1321>

petroleum (oil) exclusion under CERCLA: https://www.andrewskurth.com/assets/htmldocuments/10164_Updated_CERCLA%20Petroleum%20Exclusion.pdf

CERCLA definition of “pollutant” and “contaminant” excludes oil (definition #33): <https://www.law.cornell.edu/uscode/text/42/9601>

very low levels of oil cause harm

to wildlife: http://www.afsc.noaa.gov/publications/misc_pdf/peterson.pdf

to humans: <http://www.atsdr.cdc.gov/phs/phs.asp?id=120&tid=25>

7/ Where do Oil-Chemical pollutants go?

Examples from photos

air, land, surfaces:

<http://www.desmogblog.com/2014/08/20/general-honor-enviro-groups-call-strengthening-epa-s-proposed-refinery-emissions-standards>

water, food (fish), humans: <http://juliedermansky.photoshelter.com/image/I0000dTgHwDi5xnw>

fracking & well water contamination:

<http://www.desmogblog.com/2014/01/09/steve-lipsky-responds-report-clearing-epa-wrongdoing-fracking-study>

<http://one.gaslandthemovie.com/home>

air, land, food (crops), water (field runoff implied): <http://modernfarmer.com/2015/01/fog-farming/>

8/ Water cycle & Oil-Chemical hitch-hikers

hydrologic cycle: <http://www.physicalgeography.net/fundamentals/8b.html>

aerial transportation & deposition of pollutants:

<http://www.eoearth.org/view/article/155293/>

<http://www.environment.ucla.edu/reportcard/article1497.html>

9/ Routes of Oil-Chemical exposures

Galena Park in Houston (Manchester), Texas:

<http://www.houstonchronicle.com/news/science-environment/article/Residents-near-refineries-urge-new-pollution-5670059.php>

<https://publiclab.org/notes/liz/10-01-2015/when-100-000-is-not-enough-how-citizen-data-could-relate-to-government-regulation>

ATSDR glossary of terms: <http://www.atsdr.cdc.gov/glossary.html>

general overview of pollutant pathways from entry to elimination: <http://www.biotechnologyforums.com/thread-1876.html>

10/ Oil-Chemical exposures & health effects

newborn babies with chemical burden: <http://nutritionresearchcenter.org/healthnews/pre-poisoned-babies/>

pollution, toxic chemicals & your health: <http://www.nrdc.org/health/>

health hazards of oil spills:

https://www.researchgate.net/publication/51171266_The_Adverse_Health_Effects_of_Oil_Spills_A_Review_of_the_Literature_and_a_Framework_for_Medically_Evaluating_Exposed_Individuals
<http://insideclimatenews.org/news/20130618/what-sickens-people-oil-spills-and-how-badly-anybodys-guess>

11/ Types of susceptible people

Center for Environmental Health, archived webinar series, What's energy development doing to our reproductive health? <http://www.ceh.org/webinar-series-energy-development-impacts-reproductive-health/at-risk-populations>: <http://envirn.org/pg/pages/view/1334/harmful-environmental-exposures-and-vulnerable-populations>
http://www.healthyschools.org/HSN_KidsOilSpillFlyer.pdf
TILT and pre-exposed populations:
<http://discovermagazine.com/2013/nov/13-allergic-life>
http://www.niehs.nih.gov/news/assets/docs_a_e/download_background_material_toxicantinduced_loss_of_tolerance_by_claudia_miller_508.pdf
African Americans:
http://www.heart.org/HEARTORG/Conditions/More/MyHeartandStrokeNews/African-Americans-and-Heart-Disease_UCM_444863_Article.jsp#.Vt4G5pMrKHo
<http://www.hematology.org/Patients/Anemia/Sickle-Cell.aspx>
C677T mutations: <http://www.jillcarnahan.com/2014/02/23/health-tips-for-anyone-with-a-mthfr-gene-mutation/>

12/ Dose plus host makes the poison

host susceptibility makes the poison: <http://discovermagazine.com/2013/nov/13-allergic-life>
Healthy Worker Syndrome: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2847330/>

13/ Environmental Justice stressors & health risk

<http://content.healthaffairs.org/content/30/5/879.long>

14/ Air quality scenarios

30 toxic chemicals at high levels: <http://www.desmogblog.com/2013/04/29/study-reveals-30-toxic-chemicals-high-levels-exxon-arkansas-tar-sands-pipeline-spill-site>
home demolitions and purchases: <http://thecabin.net/news/local/2014-03-29/exxon-saturates-mayflower-housing-market#.Vwfn3WOSKtB>
federal standards indicate air levels are "safe": <http://grist.org/climate-energy/arkansas-town-in-lockdown-after-oil-spill-nightmare/>

15/ Why is this important? Listen...

BP oil spill, dispersants & health effects: <http://www.truth-out.org/news/item/28623-scientists-and-doctors-sound-alarm-over-health-dangers-of-oil-spill-dispersants>
BP oil spill & children's health: <https://www.mailman.columbia.edu/public-health-now/news/oil-spill-has-far-reaching-effects-children-and-families>

Deadly dispersants, 2011–2013 investigation by Government Accountability Project: <https://www.whistleblower.org/program-areas/public-health/corexit>

16/ Temporary jobs = more at-risk

BP contract workers from Bennedale, Mississippi: http://switchboard.nrdc.org/blogs/rkistner/gulf_residents_complain_about.html

Deadly dispersants, addendum 2015: <https://www.whistleblower.org/sites/default/files/GAP%20Addendum%20Report%20Final.pdf>

17/ Chronic and multiple Oil-Chemical exposures

endocrine disruptors: <http://www.endocrinedisruption.org/>

Sarnia, The Beloved Community (film and resource guide): <http://www.newsreel.org/guides/belovedcommunity/bcdiscuss.htm>

Sarnia, improved air quality in 2013: <http://www.theobserver.ca/2015/04/15/sarnias-air-quality-rated-good-to-very-good-93-of-the-time-in-2013>

multiple chemical exposures & health issues:

<http://www.chemicalsensitivityfoundation.org/>

<https://www.youtube.com/watch?v=acw2kswJbw&feature=youtu.be>

18/ Reducing community Oil-Chemical exposures

Info mapping tool: EPA EJScreen: <https://www.epa.gov/ejscreen/learn-use-ejscreen>

Success stories:

Norco, Louisiana: <http://www.goldmanprize.org/recipient/margie-richard/>

Aamjiwnaang Band, Canada: <http://www.aamjiwnaangenvironment.ca/>

19/ Reducing indoor Oil-Chemical exposures

National Geographic, Pollution Within. 2006: <http://ngm.nationalgeographic.com/2006/10/toxic-people/duncan-text>

<http://www.consumerreports.org/cro/news/2010/08/7-easy-ways-to-reduce-indoor-air-pollution/index.htm>

<https://www.epa.gov/indoor-air-quality-iaq/inside-story-guide-indoor-air-quality#why-booklet>

parabens: <http://www.breastcancerfund.org/clear-science/radiation-chemicals-and-breast-cancer/parabens.html>

phthalates: <http://www.breastcancerfund.org/clear-science/radiation-chemicals-and-breast-cancer/phthalates.html>

webinar series on six classes of chemicals of concern: <http://www.sixclasses.org/>

20/ Reducing Oil-Chemical body burdens

effects of stress on health: <http://www.healthline.com/health/stress/effects-on-body>

Environmental Health Clinic–Dallas (one of oldest chemical detox centers in the U.S.): www.ehcd.com

American Environmental Health Foundation: <http://www.aehf.com/>

Green Science Policy Institute, resources for consumers: <http://greensciencepolicy.org/>

http://greenguard.org/en/consumers/consumers_tips.aspx

21/ Talking with your health care provider

Continuing medical educational webinar series accessible to the public:

patient evaluation: <https://www.youtube.com/watch?v=zNttF279-fc>

patient petrochemical services, example of treatment: <http://www.ehcd.com/patient-petrochemical-services/>

22/ Understanding immune system response

Difference between food allergies and other hypersensitive reactions: <http://thewholejourney.com/differences-between-ige-and-igg-testing-for-allergies-and-sensitivities/>

Types of hypersensitive reactions: <http://meridianvalleylab.com/igg-food-allergy-testing>

Immunoglobulin classes and subclasses (NOT light reading but good concepts): <https://www.bio-rad-antibodies.com/immunoglobulins-classes-subclasses.html>

International Coding of Diseases, ICD-10; notice delays after BP disaster! <http://searchhealthit.techtarget.com/definition/ICD-10>

25/ Test scenario #3

Toxic Trespass ~ How are your children? (film & resource guide): www.toxictrespass.com

RESOURCES FOR YOUR HEALTH CARE PROVIDER

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