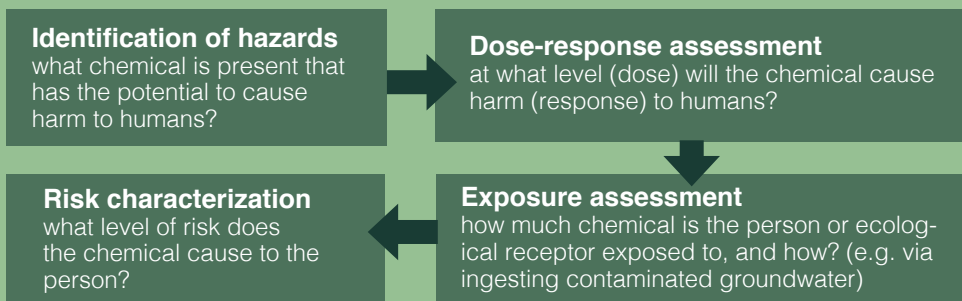


# RISK ASSESSMENT

## WHAT IS RISK ASSESSMENT?

A human health risk assessment evaluates the potential risks to humans from environmental stressors (site contaminants). An ecological risk assessment evaluates the potential risks to the environment from environmental stressors.

There are four major steps of a human health risk assessment. These steps seek to answer the following questions:



A similar process is followed to conduct an ecological risk assessment. In an ecological risk assessment, impacts to ecosystems and wildlife is assessed (e.g. river water quality, fish health, etc.).

## How are these data used?

- Results of risk assessments tell us if the actual chemicals and concentrations present at a site pose a risk based on exposure pathways, which are the paths through which people or the environment come into contact with contaminants.
- Data are used in the risk management process to do the following:
  - o Determine the cleanup levels for chemicals in soil and groundwater
  - o Identify chemicals and media requiring cleanup
  - o Support cleanup decisions, such as what treatment method is needed to mitigate the human health or ecological risk
- In some instances, site-specific cleanup levels are calculated to be higher than state-wide levels. This can happen even while the site-specific cleanup levels remain protective of human health and the environment under the planned site use. This is because state and federal default cleanup levels are intended to be used under a wide range of conditions that can be found at different sites. These default cleanup levels cannot account for differences between individual properties and receptors at each property.

## Types of questions a risk assessment tries to answer:

- Is there potential risk to humans or the environment caused by environmental stressors such as chemicals?
- What are the potential pathways or routes of exposure?
- Is there a level below which some chemicals don't pose a risk?

## DEFINITIONS

- ▶ **Environmental stressor** – any physical, chemical, or biological entity that can cause an adverse effect in humans or ecosystems. An example is chemicals in the environment.
- ▶ **Receptor** – any human, flora (plants), or fauna (animals) that may be exposed to an environmental stressor.
- ▶ **Exposure pathway** – a path through which an environmental stressor contacts a receptor (e.g. via ingestion, dermal (skin) absorption, or inhalation).



## WHAT STAGE OF THE ACT 2 PROCESS IS THIS?

- Exposure pathway identification is conducted during the remedial investigation stage
- Risk assessment and development of site-specific standards is generally conducted after the remedial investigation stage or the site can move directly to the cleanup stage.

## Where can I learn more?

- EPA guidance on risk assessment can be found at: <https://www.epa.gov/risk/conducting-human-health-risk-assessment>
- PA DEP guidance on risk assessment is available in Section III(H) of the ACT 2 Technical Guidance Manual available from: <https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Guidance-Technical-Tools/Pages/Technical-Guidance-Manual.aspx>