



NEWTOWN CREEK 7/24/2013 CAG MEETING INFORMATIONAL HANDOUT

ECOLOGICAL RISK ASSESSMENT

An ecological risk assessment is the process for evaluating how likely it is that the environment may be impacted as a result of exposure to one or more environmental stressors such as chemicals, land change, disease, invasive species and climate change.

Every day, people face questions about environmental concerns, many of them related to plants, animals, ecosystems as a whole, and how we interact with them. These questions may be about potential risks such as impacts on the aesthetic value of a place due to physical alterations, effects of pollution on endangered species, or the consequences of long-term release of contaminants to an ecosystem. For example:

- How would the construction of a dam impact fish populations in nearby water bodies?
- Can the residential or agricultural application of an insecticide end up harming an endangered bird species?
- Do contaminants in the environment from an abandoned industrial or mining facility significantly reduce the use of the site and to nearby areas?
- What is the risk of introducing a non-native oyster to an estuary?
- How does fertilizer runoff reduce oxygen levels in water bodies such as bays?
- Are some plants or animals more likely to be susceptible to environmental stressors because of factors such as age, genetics, body size, or differences among species?

A key part of EPA's mission is understanding the potential effects of stressors such as those described above and managing risks from them in order to protect the health of the natural environment, and the natural resources that people rely on.

HOW DOES EPA CONDUCT AN ECOLOGICAL RISK ASSESSMENT

Ecological risk assessment includes three phases:

- Planning – [Planning and Scoping process](#)

EPA begins the process of a Ecological risk assessment with planning and research.

- Phase 1 – [Problem formulation](#)

Information is gathered to help determine what, in terms of plants and animals, is at risk and what needs to be protected.

- Phase 2 – [Analysis](#)

This is the determination of what plants and animals are exposed and to what degree they are exposed, and if that level of exposure is likely or not to cause harmful ecological effects.

- Phase 3 – [Risk characterization](#)

Risk characterization includes two major components: risk estimation and risk description. "Risk estimation" combines exposure profiles and exposure-effects. "Risk description" provides information important for interpreting the risk results and identifies a level for harmful effects on the plants and animals of concern.

HOW DOES EPA USE ECOLOGICAL RISK ASSESSMENTS?

At EPA, ecological risk assessments are used to support many types of actions, including the regulation of hazardous waste sites, industrial chemicals, and pesticides; or the management of watersheds or other ecosystems affected by multiple chemical, physical, or biological stressors.

Ecological risk assessments can be used to predict the likelihood of future effects (prospective) or evaluate the likelihood that effects are caused by past exposure to stressors (retrospective). Information from ecological risk assessments are then used by risk managers for follow-up such as communicating to interested parties and the general public, limiting activities related to the ecological stressor, limiting use of a given chemical, or developing a monitoring plan to determine if risks have been reduced or whether an ecosystem is recovering.