



Soil reference values - Cleaning up contaminated sites

The Minnesota Pollution Control Agency (MPCA) is revising their soil reference values (SRVs) and soil investigation guidance. Draft documents are available at <http://www.pca.state.mn.us/srv>. The SRVs and soil investigation guidance are used by MPCA and professionals who clean up contaminated sites to make them safe to use.

What are soil reference values (SRVs)?

SRVs are numerical values representing the amount of a chemical in soil that is safe for people who use a site. These values are determined using calculations provided by the U.S. Environmental Protection Agency (EPA). The calculations take into consideration:

- *What type of site is being evaluated*
- *How a person at a site might contact the soil*
- *How the chemical impacts a person's health*
- *How the chemical acts in the soil*

MPCA consults with the Minnesota Department of Health when revising the SRVs.

There are two different types of SRVs based on *what type of site is being evaluated*:

- Residential/Recreational SRVs
- Commercial/Industrial SRVs

The type of site determines *how a person might contact the soil*. At a Residential/Recreational site we expect children and adults to contact soil more frequently and for a longer period of time. At a Commercial/Industrial site we expect adults to contact the soil less frequently and for a shorter period of time.

How the chemical impacts a person's health is determined based on laboratory studies. These studies provide a numerical value indicating the potential for possible cancer and noncancer impacts. The SRV is based on whichever value (cancer or noncancer) is most protective of human health.

Laboratory studies are also completed to determine *how the chemical acts in the soil*. For example, some chemicals are more likely to travel through the soil than others.

How does MPCA use SRVs?

SRVs are used to determine if there are any potential human health risks at redevelopment and developed sites with contamination. Samples from the soil are obtained from the site and sent to a laboratory for chemical analysis. Results show the amount of each chemical that is in the soil (chemical concentration). Since the SRVs are intended to be conservative values protective of human health, if the results show that none of the chemical concentrations are higher than the SRVs, the soil is safe for the people using the site.

If the results show that any chemical concentrations are higher than the SRVs, MPCA oversees an investigation to determine if the amount of the chemicals present in the soil are a potential risk to the people using the site. This investigation takes into consideration many site specific factors including:

- How the site is used or will be used
- Specific chemicals present

- Amount of the chemical present
- Type of soil present
- People's access to the contaminated soil

If the investigation results indicate that the site does present a risk to the people using it, site specific clean up values are determined. Site specific cleanup values are calculated based on the same methodology as the SRVs using site specific information gathered during the investigation. These values are used to determine appropriate measures to be taken to adequately ensure the people using the site are protected. These measures may include:

- Removal of contaminated soil
- Eliminating peoples contact with the contaminated soil

Why are SRVs revised?

MPCA occasionally revises the SRVs when:

- EPA provides new information about the calculations
- New information is available about:
 - How a person at a site might contact the soil
 - How the chemical impacts a person's health
 - How the chemical acts in the soil

What are background threshold values (BTVs)?

Background threshold values (BTVs) are numerical values that represent the amount of a chemical that is present in uncontaminated soils across the state of Minnesota. These values represent the amount of chemical that would be in soils that any person in Minnesota might contact. If a SRV is less than the amount of the chemical that occurs in uncontaminated soil across the state of Minnesota, the SRV is set to a BTV.