



Intrusion screening values and vapor intrusion

The Minnesota Pollution Control Agency (MPCA) is revising its intrusion screening values (ISVs) and vapor intrusion investigation best management practices. Draft documents are available at <https://www.pca.state.mn.us/waste/cleanup-guidance>. ISVs and vapor intrusion investigation guidance are used by MPCA and professionals who clean up contaminated sites to make sure they are safe to use.

What are intrusion screening values?

Intrusion screening values (ISVs) are numerical values representing the safe amount of a chemical in indoor air for people who use a building. These values are determined using calculations provided by the U.S. Environmental Protection Agency (EPA). The calculations take into consideration:

- What type of building is being evaluated
- Amount of time a person is in contact with air inside a building
- How the chemical impacts a person's health
- How the chemical acts in the air

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

There are two different types of ISVs based on what type of building is being evaluated:

- Residential ISVs
- Commercial/Industrial ISVs

The type of building determines how a person might come in contact with indoor air. In a residential building, we expect children and adults to come into contact with the air more often and for a longer period of time. In an industrial building, we expect adults to come in contact with the air less often and for a shorter period of time.

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

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

How does Minnesota Pollution Control Agency use intrusion screening values?

Air samples are collected beneath a building to determine if any chemical vapors are present. If chemical vapors are present, there is a possibility that they could be entering the building. Research shows that only a portion of the chemical vapors underneath a building will enter into a building. This reduction of chemical vapors is called vapor attenuation.

The air samples collected beneath the building are sent to a laboratory for chemical analysis. Results show the amount of each chemical that is in the air beneath the building. To determine if there are possible risks to people using the building, the amount of chemicals in the air sample collected beneath the building is compared to the ISVs with an attenuation factor.

- If the amount of chemical present is below the ISV value with the attenuation factor, there is no human health risk to people using the building from the air below the building.
- If the amount of chemical present is greater than the ISV value with the attenuation factor, actions are taken to ensure people using the building are protected.

In some situations, samples of indoor air may also be collected and sent to a laboratory for chemical analysis. Results show the amount of each chemical that is in the indoor air. To determine if there are any possible risks to people using the building, the amount of each chemical present in indoor air is compared to the ISV value (without using an attenuation factor).

- If the amount of chemical present in indoor air is below the ISV value, there is no human health risk to people using the building.
- If the amount of chemical present is greater than the ISV value, actions are taken to ensure people using the building are protected.

Why are intrusion screening values revised?

MPCA occasionally revises the ISVs when:

- New information is available about:
 - How a chemical impacts a person's health
 - How a person in a building may come in contact with indoor air
 - How the chemical acts in the air
- The EPA provides new information about the calculations.