What is the Voluntary Remediation Program (VRP)?

The Voluntary Remediation Program encourages companies, communities, and other citizens to voluntarily clean up sites that have been polluted in the past. These sites can then be used for new development projects. The program was developed by a wide group of people including representatives from the general public, public health groups, industry, environmental groups, colleges and universities, and local governments.

What is meant by "cleanup" and "remediation"?

"Cleanup" and "remediation" mean the same thing. They mean the removal, destruction, or control of hazardous chemicals at waste sites. Any one of these three—removal, destruction, or control—may be used at a VRP site. Sometimes, combinations of the three are used. At some VRP sites, it is not possible to completely remove or destroy all of the hazardous chemicals present. In those cases, the hazardous chemicals that are not removed or destroyed are tightly controlled to keep them from spreading or causing harm.

Who is in charge of the VRP?

The West Virginia Department of Environmental Protection's Office of Environmental Remediation (OER) administers the VRP.

Does OER carry out cleanups?

No. Property owners, assisted by a Licensed Remediation Specialist (LRS), are responsible for cleaning up sites. The LRS oversees the risk assessment and assists in investigating the site and making cleanup decisions. The overriding duty of the LRS is to protect the safety, health, and welfare of the public. LRSs are certified by the state of West Virginia and are required to carry out their work according to the VRP laws and regulations.

Can I be certain the risk assessment is right?

Because it is not possible to know everything about a chemical's toxicity or people's contact with chemicals at VRP sites, there is some uncertainty about the calculated risks. The methods used to calculate risk are designed to result in risk estimates that protect human health. You can find more about the uncertainty in risk assessment in the plain-language guide to risk assessment.

Does risk assessment apply to wildlife?

Yes. Many of the principles used in risk assessments for humans apply to risk assessments for animals and plants. The VRP requires that the risks to animals and plants be evaluated.

Whom can I contact about risk assessment at VRP sites?

Call or write the Office of Environmental Remediation for more information about risk assessments for VRP sites:

Office of Environmental Remediation
West Virginia Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304
Telephone: (304) 926-0455

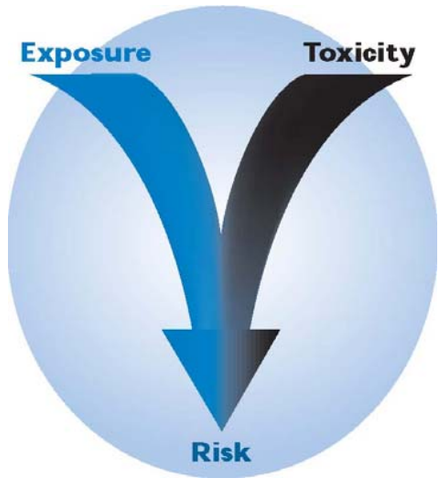
Web site://www.wvdep.org/item.cfm?ssid=18

WVDEP Mission Statement

Use All available resources to protect and restore West Virginia's environment in concert with the needs of present and future generations.

Risk Assessment and the West Virginia Voluntary Remediation Program

FREQUENTLY ASKED QUESTIONS



Why should I be concerned about risk assessment?

Risk assessment is used to make two important decisions about what is done at sites in the Voluntary Remediation Program (VRP). First, risk assessment is used to decide whether a site needs to be cleaned up to reduce risk to human health. Second, if cleanup is needed, risk assessment helps determine how much cleanup is needed

What is risk assessment?

"Risk assessment" means estimating the risk that humans will get cancer or be harmed in some other way from chemicals found at hazardous waste sites. The chemicals may be at the site or may have moved away from the site to nearby properties.

What does risk assessment tell us?

A risk assessment describes the odds of being harmed by chemicals at a hazardous waste site. We talk about the risk of getting cancer. Risk is the *chance* that cancer will occur as a result of coming in contact with hazardous chemicals. Risk is not the harm itself, but rather the odds, or probability, that the harm (cancer) may occur. The chance of getting cancer is expressed like the odds in a horse race or lottery. For example, we may find the risk of getting cancer is one in a million.

Can I be harmed by chemicals coming from VRP sites?

At most VRP sites, hazardous chemicals were released years ago, and the chemicals have spread out to low levels in the environment. These low levels are usually not dangerous in the short term. For the long term, they may need to be cleaned up.

How might I come in contact with chemicals from VRP sites?

You might come in contact with chemicals if you work at or visit VRP sites. There may be hazardous chemicals in the topsoil or surface water (for example, ponds or creeks) at the site. Chemicals may also have moved away from the site. They may move into the air and be blown off site or be washed down into groundwater that moves away from the site. If contaminated groundwater is used directly from the ground without treatment, you may come in contact with hazardous chemicals.

What is exposure?

"Exposure" means contact with toxic chemicals *and* their movement into your body. Some of the most common ways chemicals may enter your body are:

- through your skin—known as *dermal exposure*,
- in the air you breathe—known as *inhalation exposure*, and
- in water or food you drink or eat—known as *ingestion exposure*.

You may often hear these types of exposure described in discussions of risk assessment.

What types of chemicals are at VRP sites?

There are many types of chemicals that might be at VRP sites, but at most sites there are usually only a few. These chemicals are grouped into three classes, which you will often hear mentioned in discussions of VRP sites:

- Volatile organic compounds (VOCs)
- Semivolatile organic compounds (SVOCs)
- Metals

Are these chemicals poisonous?

All chemicals have some ability to cause harm. Their ability to harm human health is known as *toxicity*. Some chemicals are very toxic; others are not. Whether the chemicals at a VRP site are very toxic will depend on which ones are at the site.

Is toxicity the same as risk?

No. A chemical's ability to poison—have a toxic effect—is important in determining the risk it causes. Risk is the odds of a toxic effect (harm) happening. It is easy to confuse toxicity and risk. Though they are related, they are not the same.

So how is risk determined?

Risk is determined by considering both the ability of a chemical to cause harm (toxicity) and the amount of contact with the chemical (exposure). If you would like more information about how risk is calculated, a *Plain-Language Guide to Human Health Risk Assessment in the West Virginia Voluntary Remediation Program* is available from the Office of Environmental Remediation.

Volatile Organic Compounds (VOCs)

Volatile organic compounds are liquid chemicals that evaporate (volatilize) easily. They are often used as solvents to dissolve things. They are used in making chemicals, in manufacturing electronics, and in numerous other industries. They are widely used in both industry and at home to dissolve grease and paint and to clean surfaces. Gasoline and diesel fuel are made up of many chemicals, most of which are VOCs. Many chemicals are considered VOCs. A few that are often found at VRP sites include:

Benzene	Acetone	Toluene
Xylene	Vinyl chloride	Chloroform
Trichloroethylene (TCE)	Perchloroethylene (PCE)	

Because VOCs evaporate easily, they are of concern because they can be breathed from the air.

Semivolatile Organic Compounds (SVOCs)

Semivolatile organic compounds are chemicals that evaporate slowly, or not at all. Many by-products and wastes from the production of chemicals contain SVOCs. Soot and ash left over after things are heated or burned often contain SVOCs. Pesticides used in agriculture and around the home are SVOCs. SVOCs that may be found at VRP sites include:

Dioxin	Pesticides
Polychlorinated biphenyls (PCBs)	Phenol
Polyaromatic hydrocarbons (PAHs)	

Some SVOCs remain in the environment for a long time. As a result, there may be a greater chance of coming in contact with them.

Metals

Many industrial and commercial products contain metal compounds. Many waste materials contain metals as well. Some metals occur widely in nature and are essential for life. Other metals, often called "heavy metals", are very toxic. Some metals that are likely to be of concern at hazardous waste sites include:

Lead
Mercury
Cadmium
Arsenic

Unlike most VOCs and SVOCs, metals do not break down in the environment.