

SHELTER IN PLACE

You are at work in an office building in an industrial area. An explosion occurs a few buildings down which releases hazardous materials. What do you do to protect yourself?

You are home. A motor vehicle accident happens a block away, involving a truck with radioactive markings. The truck's contents are leaking and emergency responders monitor a radioactive atmosphere. What do you do to protect yourself and your family?

As emergency personnel, we know we have options to protect ourselves, our families, our co-workers and our communities. We can make advisory evacuations orders, mandatory evacuations orders, do nothing or shelter-in-place.

Since Hurricane Katrina, we have heard a lot about shelter-in-place (SIP). Simply, it means remaining in your residence or business when there is an incident outside which has released contaminants into the air. It also means moving inside if you are outside.

What types of disaster call for an SIP plan?

To begin the planning process, you must do a risk assessment to determine what threats exist in the vicinity of your facility or home and the likelihood those threats will actually occur. The most likely situations which could require SIP are chemical releases, radiological releases, or weather-related events, such as tornadoes.

If the biggest threat is a chemical manufacturing plant less than a mile away, while evacuation is still the preferred action, SIP is a viable option.

Who decides if I should activate my plan?

Generally, your local emergency management office (EMO) provides that information. The local EMO must gather information on the incident, weather and wind conditions and other related incidents to determine what course of action it will recommend. This happens quickly but not immediately, so businesses and residences are still responsible for taking immediate action to protect their assets, both human and property.

Residents and businesses must have their SIP plans ready to implement while they are awaiting further instruction from the local EMO. Therefore, based on a company's plan, the person identified as being in charge will make the first decisions on what to do. SIP for chemical or radiological release is a short-term solution to reduce exposure to the contaminants.

What area should I use to SIP?

In a home, the area should be either windowless or have a minimum number of windows and doors and, in the case of chemical releases, be on the first floor, not the basement. Certain chemicals are heavier than air and will seek the lowest point. Also, give consideration to below-grade sheltering for radiological incidents or tornadoes, due to increased shielding and protection.

A good rule of thumb is to provide approximately 10 square feet of space per person. Preferably, the space should have a water supply and toilet for sanitation purposes. Multiple areas may be feasible.

Emergency experts debate whether or not you should seal an SIP area with plastic and duct tape. As discussed earlier, SIP is not for long-term sheltering. It is a measure that will protect people for a short period of time until they can be safely evacuated or the hazard has passed. No building is 100 percent airtight. Contaminants will enter the building and even the SIP areas.

A person's rate of exposure to the contaminants is reduced in SIP, but they will still be exposed. Remember the formula: Time, distance and shielding. SIP will extend the time before adverse health effects occur. SIP will only minimally affect distance. SIP will provide shielding; using plastic and tape to secure openings will provide additional shielding.

Don't forget: The more people you have in smaller and more tightly sealed places, the greater the risk of oxygen deprivation. You should not seal an SIP space until your local EMO officials direct you to do so.

What kind of communications do I need for SIP?

In any disaster or emergency, communications is a critical link in protecting people and emergency responders' operation. SIP communications take good planning. Attend local disaster preparedness meetings. Ask the local EMO for their disaster brochures. You should have EMO telephone numbers.

Medium and large businesses can expand on the above by meeting with local emergency management officials to determine where or if they should be more integrally involved in the local plan. Establish a working relationship between your business and the local EMO to understand information and receive guidance for your SIP plan. *The author's experience as a local emergency manager has shown, unfortunately, that most businesses have not established a relationship with their EMO.*

Are there different types of SIP?

The National Institute for Chemical Studies, in its report "Sheltering in Place as a Protective Action," says the Oak Ridge National Laboratory has defined four different levels of SIP (www.nicsinfo.org). Each level comes with increased

protection and therefore a safer, longer-lasting environment. These levels are defined as follows:

1. *Normal Sheltering* - closing all doors and windows and turning off all furnaces, air conditioners or other ventilation equipment.
2. *Expedient Sheltering* - in addition to normal sheltering, take simple measures to reduce infiltration such as: placing plastic sheeting over windows and vents and taping over electrical outlets, around doors and other openings.
3. *Enhanced Sheltering* - making modifications to the structure to reduce infiltration. These modifications are steps we often use to weatherize homes, such as caulking around windows, doors and other places where surfaces meet, using weather stripping and installing storm windows.
4. *Pressurized Sheltering* - using special gas-particulate filter-blower units to pressurize a sealed room, building or other enclosure with filtered air. The filter-blower produces an outward flow of air through leakage points, which prevents contaminated air from entering the shelter. Pressurized shelters are expensive to implement and are not typically in use for the general public.

How do I SIP for biological contamination like a pandemic?

Sheltering for biological contamination is a different story. Long-term sheltering is more likely to occur, maybe even for a few weeks. People will be quarantined so they must stay in their homes or on their property. You should identify one person to leave the property to get supplies and medications. Isolate this person from the rest of the family - which means no contact with them. You need to address quarantine issues separately from your SIP plans.