

TURNAROUND FILMS



Concrete, asphalt, roofs: we've built so much impervious surface that we have cut off the sky from the soil.

In a natural environment, rainwater moves across and through the soil, eventually making its way to a river or stream. But the results of this — mud, marshes, flood zones — are not compatible with modern human life. Over the years we've come up with ways to move water away from us and keep our homes, roads, and workplaces dry.

The problem is that once you've got all that drainage and impervious surfaces — asphalt and roofs, mostly — the water moves in new and problematic ways. We've ended up with flash floods, clogged drains, and trash and pollutants flowing off the streets. And all of those surfaces hold the heat of the sun and make our urban spaces much hotter.

In the age of climate change, with hotter air that carries more rain, these problems are only going to get worse.

Watch *The Impervious Problem* and other environmental/ climate change films on turnaround-films.com

Pervious vs Impervious

What are impervious and pervious surfaces?

- Impervious surfaces, also called impermeable surfaces, have been designed to prevent the absorption of water. These materials include asphalt, cement, stone or brick pavers, and roofs of various kinds.
- Pervious surfaces, also called permeable surfaces, allow for the absorption and transfer of water. These are typically naturally occurring soils, porous rock, lawns, and sand, but also include human designed materials, like pervious pavements, patterned pavers, cobblestone and gravel roads, and green roofs.

What problems do impervious surfaces cause?

- On an impervious surface, stormwater moves fast and in greater quantities. Our aging drainage systems are not capable of capturing all of the water brought by increasingly heavy rains, creating backups, damaging floods, and erosion.
- Pollutants that are on an impervious surface are picked up and carried by the water into the drainage system. These can include home, street, and industrial chemicals, animal feces, agricultural and lawn fertilizers, road salt, and trash. Most of the stormwater drainage in these systems is not treated and is carried directly into the nearest stream, river, or ocean.
- Impervious surfaces are good at absorbing and holding heat, causing islands of heat in cities. Areas with significant amounts of impervious surfaces have a higher ambient air temperature during the day and overnight. This is potentially life-threatening during a summer heatwave.
- Hot, impervious surfaces heat rainwater that drains into catch basins. That heated water increases the temperature of streams and rivers as it flows to the sea and can damage delicate ecosystems along the way.
- Impervious surfaces prevent stormwater from reaching the soil, waterways, and other places that need it. This can prevent the groundwater from recharging, causing significant problems for plants and animals that need water.

To reduce the effects of impervious surfaces, property owners and town planners can:

- Maximize the amount of permeable surfaces in our landscaping.
- Create rain gardens, shallow depressions in the landscaping planted with moisture-loving plants that capture stormwater and release it gradually into the soil.
- Install a green roof. These rooftops support plant life and capture rainwater before it runs off. They reduce summer heat retention and insulate a building year-round.
- Harvest rainwater using rain barrels or cisterns.
- Install French drains to slow down stormwater as it leaves the property and give it time to infiltrate the soil.
- Use permeable paving systems when building or replacing driveways, walkways, and patios.