Minnesota Pollution Control Agency

Coal Tar-based Sealcoat

Environmental concerns

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If you decide to sealcoat your asphalt driveway this year, there are a few things you should know. Sealcoating makes old asphalt look new and protects its surface, but there are serious environmental concerns with its use.

Sealcoat comes in two basic varieties: coal tar-based and asphalt-based. The coal tar variety is more resilient, but it contains much higher levels of a class of chemicals called PAHs (polycyclic aromatic hydrocarbons) that harm fish, and with prolonged exposure, pose a risk of cancer in humans (see Figure 1).

Environmental problems

Coal tar is a waste material generated in the conversion of coal to coke. Manufacturers choose coal tar for sealcoat because of its resistance to petroleum products like gasoline and oil, which drip from cars and deteriorate asphalt surfaces. In time, sunlight and vehicle traffic wears down sealcoat and sealcoat flakes are washed away by rain or carried away by wind, contaminating stormwater ponds, streams and lakes with PAHs.

PAHs cause tumors in some fish, disrupts the reproduction of aquatic organisms, and causes some water-bottom species to avoid sediment altogether. Health risks to humans related to PAHs are based on the length of exposure to vapors or sediments contaminated with PAHs.

PAH Concentrations

Coal tar contains as much as 30 percent PAHs by weight. A study in Austin, Texas, compared the level of PAHs in water coming off parking lots without sealcoat to water coming off parking lots coated with asphalt- and coal-tar sealcoat (Figure 2).

Figure 1: Relative amounts of PAHs in sealcoat products

An Austin, Texas, study determined that sealcoat products based on coal tar contained up to 1,000 times more PAHs than asphalt-based products. Consider asphalt-based sealcoat if you choose to coat your driveway.

Figure 2: Concentrations of PAHs in runoff

Asphalt-based sealcoat runoff (B) can contain 10 times more PAHs than an uncoated driveway (A) and runoff from a coal-tar sealcoated driveway (C) may have concentrations of PAH 65 times higher than an uncoated driveway.

The study revealed that the asphalt-based sealcoat runoff contained 10 times more PAH than the uncoated parking lot and the coal-tar sealcoat runoff had concentrations of PAH that were 65 times higher than the uncoated lot.

Maintenance expenses

Besides the health effects and the danger to the environment, PAHs are making routine maintenance of stormwater ponds by cities and townships many, many times more expensive because sediment with high-enough concentrations of PAHs must be disposed of differently.

In Minnesota, when some cities removed sediment from their stormwater ponds as part of regular maintenance, they found elevated levels of PAHs. This discovery required them to find special disposal areas, costing them many thousands of dollars more.

Current regulation

Because of the environmental problems associated with PAHs, the City of Austin, Texas, Dane County, Wisconsin, and Washington D.C. have banned use of coal tar-based sealcoat in their jurisdictions (asphalt-based sealcoat may still be used).

Recent legislation passed in Minnesota bans the purchase of coal-tar sealcoat products by state agencies by July 1, 2010. Recently, two national home-improvement retailers, Lowe's and Home Depot, took coal tar-based sealcoat off their shelves. Check with your local unit of government to see if there are any restrictions.

Make the right choice

The best choice may be to not sealcoat your driveway at all. But if you do choose to sealcoat, study labels carefully to be sure to find an asphalt-based product. Lower concentrations of PAHs in waterways will prevent costly maintenance for your city and keep waterways safe for fish and other aquatic organisms.

If you have leftover material after sealing your driveway, you can re-use or recycle it at your community's household hazardous waste facility. To find your local facility,
visit: www.pca.state.mn.us/waste/hhw

References

Van Metre, P.C., Mahler, B.J., Scoggins, M., and Hamilton, P.A., 2006. Parking Lot Sealcoat: A Major Source of Polycyclic Aromatic Hydrocarbons (PAHs) in Urban and Suburban Environments. A USGS report prepared in cooperation with the City of Austin, Texas.