INFORMATION SHEET FOR THE MANAGEMENT OF DEVELOPMENT SOILS
Last Update: May 19, 2017

Background

The Agency of Natural Resources (ANR) developed this information sheet to assist communities and developers in managing soils generated during redevelopment. As communities work to improve their downtowns by developing often abandoned or underutilized properties, soils with concentrations of polycyclic aromatic hydrocarbons (PAHs), arsenic and lead can complicate and add costs to the project. These compounds are ubiquitous in the environment and are present because they are naturally occurring (arsenic) or have been widely deposited due to anthropogenic activities (burning of fossil fuels and leaded gasoline). The 2015 Legislature passed ACT 52 that allowed for increased flexibility in managing soils contaminated with these compounds. Prior to the passage of Act 52, soils with these contaminants at concentrations above health based standards for direct contact, referred to as development soils, could be managed by keeping them on the site, or shipping them to either in-state (Waste USA landfill in Coventry) or out-of-state disposal locations. This information sheet was prepared to provide guidance on disposal options allowed under this Act and further defined in the draft *Investigation and Remediation of Contaminated Properties Rule* (IRule).

Revised Risk Based Levels for Benzo(a)pyrene and Arsenic

Due to a toxicological reassessment of benzo(a)pyrene (BaP) by EPA published in January 2017, the risk based regulatory standards being incorporated into the IRule draft have increased. The new values provide more management flexibility for BaP, the primary PAH that is used to determine response actions – particularly when coupled with the statewide background study results presented further below. The risk-based levels for lead and arsenic respectively remained unchanged or only slightly changed. Below is a table for BaP, lead, and arsenic that compares the current health based soil screening value for direct contact to the proposed standard.

	BaP (mg/kg)		Lead (mg/kg)		Arsenic (mg/kg)	
	Residential	**Commercial**	**Residential**	**Commercial**	**Residential**	**Commercial**
Current IROCP value	0.01	0.210	400	800	0.61	2.4
Proposed IRule value	0.07	1.54	400	800	0.68	3

New Background Values for PAHs, Arsenic and Lead

ANR's state-wide sampling survey established background values for PAHs, arsenic and lead. PAHs are expressed as the toxic equivalent quotient (TEQ) for BaP.

	Rural (mg/kg)	Urban (mg/kg)
BaP	0.026	0.580
Lead	41	111
Arsenic (statewide #)	16	

For arsenic, soils with concentrations below the statewide background level will not be regulated. For lead, soils with concentrations below the residential standard of 400 mg/kg will not be regulated. BaP soils that remain in urban areas with concentrations below urban background will not be regulated. BaP soils in rural areas will not be regulated when concentrations are below the risk based standard of 0.07 mg/kg. When BaP soils are moved in an urban area to locations with sensitive populations (such as residential properties or properties with schools and/or daycares), it is recommended that they be managed to alleviate any potential direct contact risk even when below urban background.

Effects on Future Projects

The background numbers for BaP establish the level at which concentrations of PAHs in development soils need to be evaluated for remediation. In other words, if a project within an urban area has levels below 0.580 mg/kg for BaP, then no remedial action will be necessary. However, if the project dictates that development soils with concentrations of BaP above 0.07 mg/kg must be moved off the property, then there are some restrictions on disposal options.

Development Soil Disposal Options

Development soils are soils that are contaminated with BaP, arsenic or lead at concentrations above background values. Act 52 created more flexibility in managing these soils, as detailed below:

- *Receiving Sites*. This allows for soils to be brought to a property that has concentrations of BaP, arsenic or lead at concentrations equal or greater to those found on the development site, and at concentrations above background levels. To be eligible as a receiving site, an application must be submitted to the Agency of Natural Resources that demonstrates that the property meets the conditions for receiving sites as detailed in the IRule.

- *Categorical Certifications*. The Solid Waste Rules allow for the disposal of development soils at certified categorical disposal facilities. The application to open a certified categorical facility is a simplified process with fewer requirements to open than a municipal solid waste landfill.

- *Alternative Daily Cover*. Development soils can be disposed of at solid waste facilities as Alternate Daily Cover (ADC) upon approval by the facility.

Example scenarios:

1. Urban Area Redevelopment. Results of soil testing shows there are no contaminants of concern except PAHs. Test results show the TEQ is 0.495 mg/kg for BaP, which is below the background concentration of 0.580 mg/kg. The property redevelopment requires the removal of excess soils to meet construction needs. ANR would allow these soils to be moved to another property within a designated urban area. ANR recommends that soils moved to locations with sensitive populations be managed to avoid direct contact. These soils could also be moved to an approved receiving site, a certified categorical disposal facility, or a permitted landfill as ADC.

2. Urban Area Redevelopment. Results of soil testing indicate that there are no contaminants of concern except PAHs; laboratory results show the TEQ is 0.750 mg/kg for BaP, which is above the urban background concentration of 0.580 mg/kg, but below the industrial soil standard of 1.54 mg/kg. Excess soils must be removed from the property due to the project construction needs. These soils can be moved to an approved receiving site, a certified categorical disposal facility, or a permitted landfill as ADC. For receiving sites, because the soil generated has BaP levels below the industrial soil standard, a soil cap may not be needed if there are sufficient institutional controls in place, e.g., the property is zoned commercial only coupled with a notice to the land record, or there is an easement/deed restriction.

3. Urban Area Redevelopment. Results of soil testing indicate that there are no contaminants of concern except PAHs. Test results show the TEQ is 1.65 mg/kg for BaP, which exceeds both the urban background and the industrial soil standard. Excess soils must be removed from the property due to the project construction needs. These soils can be moved to an approved receiving site, a certified categorical disposal facility, or a permitted landfill as ADC. Leachability to groundwater may require consideration, e.g., SPLP testing for receiving site.

4. Rural Redevelopment Projects. Rural development soils that need to be removed from the site follow the same criteria as above for urban area projects. Soil with concentrations below the residential standard of 0.07 mg/kg are not regulated. Soil with concentrations between 0.07 mg/kg and urban background values may be relocated to an urban area without regulation or to a rural receiving site, permitted categorical solid waste facility, or a permitted landfill as ADC. Soil with concentrations above the urban background shall be managed as referenced in Scenario #3 above; or Scenario #2 if BaP is below the industrial soil standard.

Temporary offsite soil stockpiling

Non-hazardous contaminated soil may be temporarily stockpiled at an offsite location providing pre-approval is granted by the Secretary, and the criteria outlined in the I-Rule are met. In general, soils will need to be polyencapsulated and meet certain siting criteria. Temporary stockpiles may not be stored longer than 90 days, or between December 1st and April 1st, unless a written waiver is submitted and approved in writing by ANR.