Fact Sheet –Coal Fly Ash and Its Health Risks

This fact sheet provides information about coal fly ash and its health risks, with special reference to contaminated ground water and dusts associated with the fly ash disposal site near Summerfield Road in Gambrills, Maryland.

What is coal fly ash?

Coal fly ash is the powdery material left over from burning ground or powdered coal. Under a microscope it is composed mostly of very small glassy silica particles that are spherical in shape. The main components of coal fly ash are oxides of silicon, aluminum, iron, and calcium, with lesser amounts magnesium, sulfur, sodium, and potassium. Other metals and metal-like elements are found in trace quantities – arsenic, cadmium, beryllium, thallium, nickel, lead, manganese, chromium, selenium, zinc, and other metals.

What ordinarily happens to fly ash?

In addition to land disposal, fly ash is often used as fill material for construction projects and is a common component of light-weight concrete for buildings, bridges, and pavement. The primary concern from the land disposal of fly ash is the potential for the trace elements listed above to enter nearby groundwater. Although fly ash is not a hazardous waste, it must be disposed of properly to prevent groundwater contamination and nuisance dusts.

What groundwater contaminants are above regulatory levels in Gambrills?

The Anne Arundel County Department of Health tested private wells in 83 homes and businesses in areas around the fly ash disposal site. Contaminants were present in approximately one-half of the wells. The actual number of wells affected by fly ash is undetermined since some of the sample results may reflect natural minerals in the area. The most common contaminants were aluminum, sulfate, and manganese. The trace elements arsenic, beryllium, cadmium, nickel, and thallium were present in some wells near the fly ash disposal site.

What are the health risks associated with contaminated groundwater in this area?

As described in the fact sheet, *Health Facts on Fly Ash Constituents* (http://aahealth.org/App_pdfs/Fly_ash2.pdf), the most common contaminants (aluminum, sulfate, and manganese) do not pose a significant risk for most individuals. Aluminum rarely presents health effects, but it can be a problem for individuals with advanced kidney disease. Water with high manganese levels should not be used when mixing powdered formula for infants, and individuals with liver disease may be slow to excrete manganese. High levels of sulfate may have a laxative effect in individuals who are not used to it. Sodium levels are elevated in some wells and should be considered by anyone attempting to maintain a low sodium diet. Water softeners create a similar challenge with sodium. Lead is elevated in numerous taps in the area and is probably a result of water standing overnight in the pipes. Running the tap for a half minute or so in the morning before using the water for drinking or cooking will reduce this potential exposure.

Among the other trace metals, arsenic was present in 4 wells near the disposal site. Although arsenic is a known carcinogen, the observed levels create very little additional cancer risk even after years of exposure. Beryllium, cadmium, and nickel are known to be associated with cancer through breathing concentrated dusts in the workplace, but their ability to increase cancer risk through drinking water has not been shown. Well owners are reminded to test their wells for radium, which can occur as a result of minerals in the local aquifer.

If trace elements are found above the regulatory levels, the water is not safe for long-term drinking and cooking and an alternative water supply should be used for these purposes. Bathing and brushing teeth with the water pose no risk.

Does dust from the site pose a risk?

The State of Maryland requires reasonable dust control measures at fly ash disposal sites to prevent nuisance conditions and health risks. Fly ash brought into the Gambrills site is wetted before transport and carried in covered trucks. As it dries it forms a crust and is not easily moved by the wind. Soil is applied as a cover material. These practices are designed to keep fly ash dust at a low level with no expected health impacts.

Who can I contact for more information?

If you have health concerns, see your doctor. If you have environmental questions contact one of the following:

Anne Arundel County Department of Health
410-222-7398
Maryland Department of Environment
410-537-3601
Maryland Department of Health and Mental Hygiene
410-767-7438

Nov 2007