Buckingham Gold Project, Aston Bay Holdings, LLC
Fact Sheet
Compiled by Friends of Buckingham

Water Pollution

Groundwater contamination is of particular concern where the groundwater feeds surface streams or lakes, or where the groundwater is directly a source of potable water for the community. The pollutants of greatest concern with gold mining are cyanide, mercury, and heavy metals such as arsenic (As), cadmium (Cd), nickel (Ni), lead (Pb), copper (Cu), zinc (Zn), cobalt (Co) and mercury (Hg). Heavy metals do not break down or degrade easily, so once released from rock or soil they persist causing long-term harm.

Chemicals will be mobile and can seep into local wells. Much of the county relies on private wells. Water pollution can also contaminate the James River, which provides drinking water to many communities downstream from Buckingham.

Mining pollution is dangerous to livestock and can enter agricultural crops. The negative effects of metals on plants include oxidative stress, effects on fluorescence, stomatal resistance, chlorophyll and photosynthesis, reproductive processes, seed germination, seed morphology and seed physiology. In addition, elevated levels of heavy metals from gold mine tailings greatly affects the metabolism, growth and morphology of soil bacteria. Bacteria are essential in the decomposition of soil organic matter and any decline in bacterial diversity or biomass may have a profound effect in nutrient absorption from soil to plants.

Biomagnification can occur in fish and birds where chemicals build up in fatty tissue, so levels become more toxic in large animals. This can harm biodiversity.

Chemicals will spread throughout the food chain, including to game species that people regularly hunt to consume.

Risk in Buckingham may be higher because of the proposed use of brownfields and former mining areas, as processes could dredge up and release prior contamination.

Human Health

Fine particles (PM10 or smaller), such as those resulting from smelting operations or found in slag dumps or arising from the erosion of contaminated soil, disperse readily into the environment, often in association with aerosols, and may travel significant distances.

Noise from earth-moving equipment, blasting, drilling and crushing can have multiple physical effects on health, including raised blood pressure.

Exposure to heavy metals is particularly harmful to babies, children and pregnant women. Cancer-related risks associated with metal and metalloid exposure among children is higher than in adults.

The most common occupational diseases, as a result of long-term exposure in the gold mining environment, are silicosis, silico-tuberculosis, pulmonary tuberculosis (TB), obstructive airways disease, occupational asthma, oral and/or nasal cavity erosions, diseases owing to ionizing radiation, noise-induced hearing loss, whole body and hand-arm vibration syndrome, as well as repetitive strain injuries.

Water Use

Mining uses large quantities of water, meaning it is not available for other uses, such as farming and household uses (i.e., human consumption).

Wastewater Discharge

The water discharged from mining operations contains harmful chemicals and is not safe for other productive uses. Following natural filtering in wetlands, it can take decades or centuries before mining wastewater is clean enough for reuse without risk to human and animal health.

Low Levels of Employment with Mechanization

There are a low number of jobs created with modern mining techniques because processes are highly mechanized. Work using this large equipment tends to require job training, meaning much of the workforce will come from outside Buckingham County.

Mitigation and Green Techniques

There are improved techniques for treatment of wastewater. There needs to be additional and more detailed information on technology to be employed. Often the methods to mine safely are more expensive and will only be incorporated if state agencies and local governments are prepared to require developers to protect human health. A network of groundwater monitoring wells is recommended in order to assess the sufficiency of preventive measures and provide an early warning system for spills or leaks.

Remediation and Site Rehabilitation

To avoid expensive clean up after mines are abandoned requires detailed assessment of soil acidity and soil properties, given the prevalence of dangerous acid mine drainage with gold mining. High acidity from this drainage can release other contaminants over time.

Interactive Mapping of Gold Mining in Buckingham

https://tinyurl.com/Bham-gold-ABRA

Friends of Buckingham

@FriendsofBucki1 info@friendsofbuckinghamva.org
http://www.friendsofbuckinghamva.org/
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