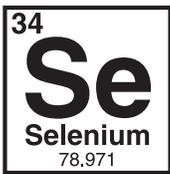


Selenium: An Essential Element



Selenium is a naturally-occurring element in the earth's crust and an essential micronutrient needed by all organisms, including people, animals and plants.

Around the world, selenium exists in various quantities and in different chemical forms. In cases where there are deficiencies, selenium is an essential mineral and supplements are used to enhance the health of food crops or is provided to humans and livestock to augment otherwise low levels in foods and the surrounding soils.

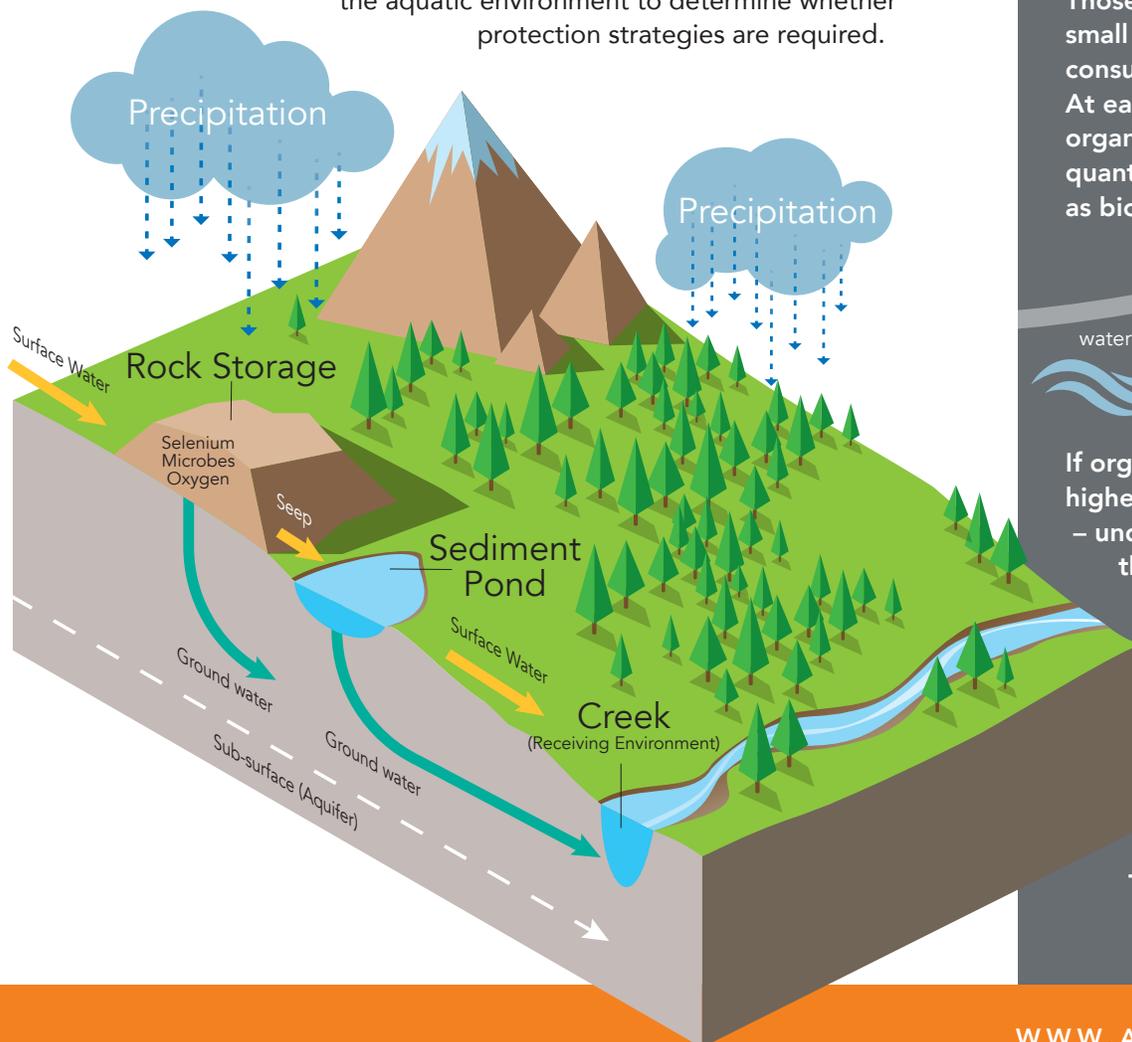


SELENIUM AND MINING

All rock contains natural chemical elements and a variety of metals and non-metals, including selenium.

Selenium can be exposed during mining because the surface area of the rock increases as the rock is processed. As water flows over the rock and/or the rock is exposed to oxygen, selenium becomes more readily dissolved in water, and may enter the aquatic environment, and become more available to organisms.

When it comes to mining, the objective is to keep the concentrations of selenium in water below concentrations that may cause any adverse effects. To do this, we measure and monitor selenium in the aquatic environment to determine whether protection strategies are required.



WHY PAY ATTENTION TO SELENIUM

We pay close attention to any substance that has the potential to cause harm.

Too much selenium can be harmful for egg-laying animals such as aquatic birds, fish and amphibians.

When inorganic selenium (from rock or soil) enters the water, it can be absorbed by the smallest organisms (algae in flowing waters or reservoirs, lakes and wetlands). Those algae are in turn consumed by small invertebrates, which are in turn consumed by fish and aquatic birds. At each stage of the food chain, organic selenium can increase in quantity. This is referred to as bioaccumulation.



If organic selenium reaches the highest level of the food chain, it can – under certain conditions – affect the offspring of egg-laying adult animals that have consumed the smaller organisms.



TELKWA COAL
LIMITED

HOW WE MEASURE AND MONITOR SELENIUM

To understand whether selenium is of concern, it is important to also understand how and where it occurs in the natural environment.

We do this by measuring and monitoring selenium in groundwater, surface water, sediments, and the tissue of aquatic organisms (algae, invertebrates, fish and aquatic birds). These media are monitored over several years and at a variety of locations within, and downstream of, the project location to ensure a full and complete understanding.

Gathering these data allows us to compare selenium concentrations with provincial and federal regulatory guidelines, specifically intended to protect aquatic ecosystems.



CONNECTING

Web More information, including meeting dates will be posted on our project website at www.allegiancecoal.com

Email Questions can be sent to info@allegiancecoal.com.au

Phone 778.643.2843

Address 1415 Hankin Avenue, Suite D
Telkwa, BC V0J 2X0



TELKWA COAL
LIMITED

REGULATORY CONSIDERATIONS

Every region in the province, and in the world for that matter, has varying concentrations of naturally-occurring selenium. Like all mine operations, Telkwa Coal is obligated to stay within the limits set by government.

Baseline studies at the Tenas site have demonstrated that concentrations of naturally-occurring selenium are below provincial and federal environmental quality guidelines. We will continue to monitor selenium during studies leading up to the submission of the environmental assessment application report.

SELENIUM MANAGEMENT AND PROTECTION STRATEGIES

Our in-depth understanding of selenium, the mineral characteristics of the rock at the Tenas mine site, combined with how the mining process changes those characteristics allows us to plan ahead, before we begin operations.

To develop a selenium management plan, we start by measuring and documenting background concentrations of various chemical elements, which occur naturally in organisms, minerals and other materials in the waters downstream of a mine. This will help us understand what, if any, mitigation measures may be needed. We will use the data gathered to help predict future concentrations in the environmental impact assessment and, and if needed, will include mitigation measures in the regulatory applications.

Selenium mitigation measures could include:

- Optimizing storage of rock to minimize exposure to oxygen and water; and,
- Capturing water from rock and treating, if needed.



Photo Courtesy of Envirogen Technologies, Inc.