

SELENIUM

IT'S IMPLICATIONS TO WISE COUNTY

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Since the 1890's our communities have existed on an economic foundation of coal mining. In the last couple of years the sudden and extensive drop in the volume of coal mined has shaken our economy, and alarmed our community leaders. The loss of revenue from severance tax sources has our county administrators concerned about our school system and other programs.

This drop in mining has been in both deep and in strip mining. This decline has been due to both the world economic slow down, and to governmental policy concerning the environment. We are familiar with concerns about mud and rock run-off, the unsightliness of the old practices of pushing dirt and rock over the side of the mountain, and of the alteration of the contours of the skyline. Most of us believed that these issues had been appropriately addressed by legislation prohibiting mountain top removal, requirements to restore the approximate original contour of the ridgeline, and of silt catching water impoundments.

Perhaps you were like me, and were struck dumb by the lead article in the July 25th issue of the "Post" that announced that the largest strip miner in Wise County, A&G, was in trouble with the court system because of its selenium pollution of Callahan Creek near Crossbrook.

Selenium pollution is a new concept for most of us. Regardless of the condition of the world economy, or of national politics, it will have a significant impact on all of us in this room, affecting real estate taxes and the quality of our schools. So what is going on? Where did it come from? Where is it going?

Selenium is a naturally occurring mineral element, much as are iron, sulfur, and carbon. It is widely distributed in nature, being in the soil, as well as in plants and animals. It is found in large concentrations in Brazil nuts, meat, seafood, and in grains. We cannot live without it. Indeed, it is part of the formulas of common vitamin pills, such as Centrum. It is the active ingredient in antidandruff shampoo. It is used in photocopiers.

In the past twenty years, however, we have become aware that it is possible to get too much of it. Selenium poisoning of both the acute and chronic types have been described. People get rashes, and have their hair fall out if they get too much. Fish and fish eating birds are especially susceptible to selenium poisoning.

Selenium is released into the ground water whenever the soil is disturbed. Large scale plowing, as in the San Joaquin Valley of California, releases enough

selenium into the streams to cause deformities in the fish and fish eating birds. Coal is formed from prehistoric plants, and thus has high concentrations of selenium. Strip mining causes massive disturbances of the soil, and especially of the coal seams. High concentrations of selenium leach out into the streams, and it is feared that it might cause ecological problems. None has been demonstrated.

The EPA has set standards for the amount of selenium that a strip mine can release into the watershed. The customary environment groups who have traditionally opposed strip mining, and even the burning of deep mined coal, such as the Sierra Club, have used these new laws to sue the strip mining companies. They have made no secret that their goal is to shut down the entire coal industry.

The environmentalists have taken the major mining companies to court over selenium. The results have been variable. They have succeeded in getting the Patriot Coal Company to sign a consent decree to stop strip-mining permanently. Alpha Natural Resources, the largest mining company in Wise County, has adopted a policy of continuing mining, but of treating the selenium run off. A&G, who until recently, was the largest stripper in Wise County, has not publically announced what they will do.

Selenium can be 69.2% removed from the streams coming from strip mines by the construction of wetlands, where plants and bacteria naturally purify the water. Iron filters also will chemically remove the selenium.

Another basic issue is that there is no agreement on what level of selenium run off is dangerous to the environment. Both the Commonwealths of West Virginia and of Kentucky are fighting the EPA standards. Kentucky believes that the appropriate level of selenium that can exist in streams is 10 times as high as the Federal Government has legislated.

One cannot find on-line any quantitative scientific studies addressing the issue of what constitutes a toxic selenium level in the nation's waterways. One wonders what the basis is for the EPA requirements.

Just how poisonous is selenium. It is safe enough that the Federal Government has mandated that selenium be used to replace lead in brass water pipe. There are no reports on-line of any ill effects of selenium run off from coal mines. There is a report from China where people became ill with selenium poisoning from eating corn grown in coal rich soil, but not from water run off. There are reports of fish poisoning from selenium in the Jan Joaquin Valley of California where desert soil had been irrigated, and the water leached selenium out of this soil, and then the selenium rich water evaporated in the desert heat, leaving minnows with selenium poisoning.

The only case of environmental selenium poisoning in the rest of the world comes from the Federal Government itself, where they released coal ash from their TVA steam plant at Kingston into the Tennessee River.

There are no other reports from anywhere in the world of selenium poisoning of any living things.

To further focus in a practical way the issue of how poisonous selenium could be, let us observe that if you have a mixture of water and selenium, and increase your daily intake of either by a factor of ten times, you will be ok with the selenium increase, but ten times the daily intake of water would kill you immediately.

In the meantime, our local economy has crashed. A massive exodus of our people is underway. The severance tax the coal industry has paid the county to support our schools and roads has all but vanished. We can expect the collapse of the infrastructure making a come back of the coal industry impossible. The coal companies may not be here in the future. Capital is vanishing. People who know how to mine coal have moved away. It is feared that the railroads will be the next to go. All this because of a problem that we have never heard of before, and one that no one seems to be able to show a scientific rationale for its regulation.

All of us need to inform ourselves about selenium.

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