

The Coal Ash Saga: Ugly Truths & Hidden Benefits

WRITTEN BY

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Montana's greatest need to keep everything in the state running (and keeping people warm and alive) in periods of our famous minus 45 degree cold spells is reliable availability of electricity. That standard is called Resource Adequacy and is most reliably provided by 'baseload power', in large part in Montana, the coal fired steam generating plants in Colstrip.

But while the energy which this coal generates is put to use efficiently in Montana, its coal ash residue is not...but could be.

This coal ash, known as Coal Combustion Residuals (CCR), has the potential to serve as an income boon to state tax revenues and provide vital national security benefits to America according to many sources, including the EPA and the Department of Defense.

For many years public and private entities have been conducting amazing research into what is referred to as Beneficial Use of CCRs. We refer to this simply as recycling: turning something that has been used for one purpose into another useful product instead of discarding it as trash.

Coal ash ponds have been leaching unhealthy metals into the ground affecting groundwater for decades. The simplest way to deal with this problem is to move it to another pond which purports to have an "impermeable" liner, "guaranteed to never leak". Like most really simple solutions, this is also the most expensive in multiple ways.

When coal is incinerated at fabulous temperatures, that which is left over as a byproduct is ash. But what remains is that which is NOT burned up and holds the key to the solution to many needs. Part of this ash, known as 'fly ash' has been used for decades as a beneficial ingredient in cement and concrete...it was a crucial element to provide the strength to hold back enormous amounts of water in the Hoover Dam. Millions of tons of coal ash is used every year in concrete for roads, bridges, and other concrete construction.

Overwhelming research over the world has demonstrated practical uses of this ash as a **resource not as refuse**. Innovation will solve the needs of society. Commercial uses for coal ash range from construction materials to elements vital to modern life and national defense known as Rare Earth minerals or Rare Earth Elements (REEs). These 17 REEs include boron, cobalt, lithium, molybdenum, radium, thallium and uranium.

Enormous Cache of Rare Earth Elements are Hidden Inside Coal Ash Waste



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At a January speech at the Naval War College at Newport, Rhode Island, Adam Burstein, technical director for strategic and critical minerals in the office of the Assistant Secretary of Defense for industrial base policy stated that 'secure sourcing of rare earth material is critical to the defense industrial base which uses them to produce virtually every Defense Department system, from unmanned aerial systems and fighter jets and submarines.'

Davin Bagdonas, a research scientist at the University of Wyoming states, "There's huge volumes of this stuff all over the country," Bagdonas said. "And the upfront process of extracting the (mineral host) is already taken care of for us."

These REEs occur in varying concentrations naturally in soil and coal. Research has found that these REEs are relatively unaffected by the coal incineration process and indeed are rendered much more readily recoverable through various filtration or chemical treatments.

In simpler terms, as most of the bulk of the coal is burned away, the REEs left behind are more easily isolated and extracted. Utilizing coal ash deposits for REE mining has many benefits over creating a new mine. The multiple government land use permits (esp. water) usually take several years to be issued (if at all) and take up large areas of land whereas coal ash ponds require neither and are immediately available, thus, avoiding years of red-tape congestion for which government bureaucracy is so famous.

Purdue University adds that "these elements have important applications in high-tech electronics such as batteries, TV screens and cellphones". The EPA says that "Coal ash can be beneficially used to replace virgin materials from the earth, conserving natural resources. The EPA encourages the beneficial use of coal ash in an appropriate and protective manner because this practice can produce environmental, economic and product benefits".

The American Coal Ash Association and the

University of Kentucky Center for Applied Energy Research have hosted a major conference, World of Coal Ash, every 2 years since 2005 with many research presentations and hundreds of participants. The Department of Energy and the EPA host equally important technical conferences as well, which deal with beneficial "re-use" of otherwise pollutants including CCRs and co2. Interesting 're-uses' of co2 range from perfume to vodka and jet fuel; so much for being useless!

In Montana, we should be using Colstrip's coal ash to produce concrete for the construction industry. However, as I understand it, Talen Energy, the unregulated operator of the Colstrip plants, has proceeded with a process of dewatering and compressing the coal ash and storing it in a building. This is not a beneficial use as defined by the industry, but it seems better than spending the estimated amounts of \$163-285 million dollars to move it to a lined pond, (from one hole in the ground to another) which may just be another "kicking the can down the road" to confront future leaders with more groundwater contamination.

A bill was introduced in the last session of the Montana Legislature, HB 753, entitled An Act Prioritizing the Beneficial Use and Repurposing of Coal Ash. Despite having 32 co-sponsors, the bill died in committee. Its sole purpose was to require prioritizing reuse (recycling) of these CCRs where reasonable.

To my knowledge, one Beneficial Use Determination (BUD) for Colstrip CCRs was issued by the Montana DEQ which seemed to say that the chemical remediation process it reviewed would indeed work as proposed, that is, providing a total transformation of the ash into a "Made in Montana" marketable product leaving no waste materials at all. That proposal was ignored by our state administration despite its potential to significantly contribute to state and local tax revenues and solve an acute environmental problem.

It is quite clear to me that Innovation by the profit making free market is the best means to solve these pressing problems. Embracing the Waste to Wealth and Ashes to Assets mentality is making real progress in the rest of the country, but not in Montana. 🇺🇸