

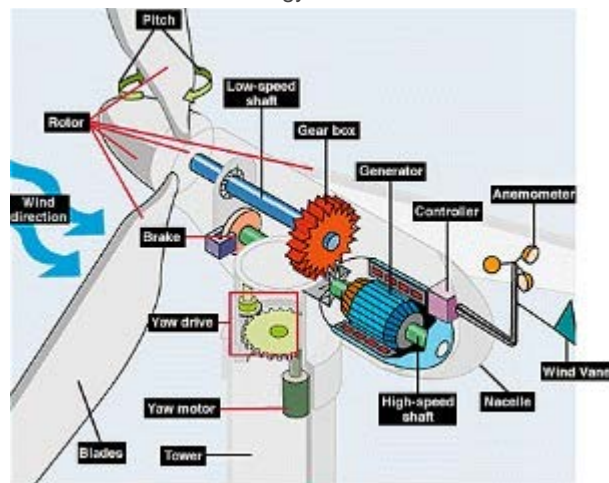
## Big Wind's Dirty Little Secret: Toxic Lakes and Radioactive Waste

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The wind industry promotes itself as better for the environment than traditional energy sources such as coal and natural gas. For example, the industry claims that wind energy reduces carbon dioxide emissions that contribute to global warming.

But there are many ways to skin a cat. As IER pointed out last week, even if wind curbs CO<sub>2</sub> emissions, wind installations injure, maim, and kill hundreds of thousands of birds each year in clear violation of federal law. Any marginal reduction in emissions comes at the expense of protected bird species, including bald and golden eagles. The truth is, *all* energy sources impact the natural environment in some way, and life is full of necessary trade-offs. The further truth is that affordable, abundant energy has made life for billions of people much better than it ever was.



Another environmental trade-off concerns the materials necessary to construct wind turbines. Modern wind turbines depend on rare earth minerals mined primarily from China. Unfortunately, given federal regulations in the U.S. that restrict rare earth mineral development and China's poor record of environmental stewardship, the process of extracting these minerals imposes wretched environmental and public health impacts on local communities. It's a story Big Wind doesn't want you to hear.

### Rare Earth Horrors

Manufacturing wind turbines is a resource-intensive process. A typical wind turbine contains more than 8,000 different components, many of which are made from steel, cast iron, and concrete. One such component are magnets made from neodymium and dysprosium, rare earth minerals mined almost exclusively in China, which controls 95 percent of the world's supply of rare earth minerals.

Simon Parry from the *Daily Mail* traveled to Baotou, China, to see the mines, factories, and dumping grounds associated with China's rare-earths industry. What he found was truly haunting:

As more factories sprang up, the banks grew higher, the lake grew larger and the stench and fumes grew more overwhelming.

'It turned into a mountain that towered over us,' says Mr Su. 'Anything we planted just withered, then our animals started to sicken and die.'

People too began to suffer. Dalahai villagers say their teeth began to fall out, their hair turned white at unusually young ages, and they suffered from severe skin and respiratory diseases. Children were born with soft bones and cancer rates rocketed.

Official studies carried out five years ago in Dalahai village confirmed there were unusually high rates of cancer along with high rates of osteoporosis and skin and respiratory diseases. The lake's radiation levels are ten times higher than in the surrounding countryside, the studies found.

As the wind industry grows, these horrors will likely only get worse. Growth in the wind industry could raise demand for neodymium by as much as 700 percent over the next 25 years, while demand for dysprosium could increase by 2,600 percent, according to a recent MIT study. The more wind turbines pop up in America, the more people in China are likely to suffer due to China's policies. Or as the *Daily Mail* put it, every turbine we erect contributes to "a vast man-made lake of poison in northern China."

## Big Wind's Dependence on China's "Toxic Lakes"

The wind industry requires an astounding amount of rare earth minerals, primarily neodymium and dysprosium, which are key components of the magnets used in modern wind turbines. Developed by GE in 1982, neodymium magnets are manufactured in many shapes and sizes for numerous purposes. One of their most common uses is in the generators of wind turbines.

Estimates of the exact amount of rare earth minerals in wind turbines vary, but in any case the numbers are staggering. According to the *Bulletin of Atomic Sciences*, a 2 megawatt (MW) wind turbine contains about 800 pounds of neodymium and 130 pounds of dysprosium. The MIT study cited above estimates that a 2 MW wind turbine contains about 752 pounds of rare earth minerals.

To quantify this in terms of environmental damages, consider that mining one ton of rare earth minerals produces about one ton of radioactive waste, according to the Institute for the Analysis of Global Security. In 2012, the U.S. added a record 13,131 MW of wind generating capacity. That means that between 4.9 million pounds (using MIT's estimate) and 6.1 million pounds (using the *Bulletin of Atomic Science's* estimate) of rare earths were used in wind turbines installed in 2012. It also means that between 4.9 million and 6.1 million pounds of radioactive waste were created to make these wind turbines.

For perspective, America's nuclear industry produces between 4.4 million and 5 million pounds of spent nuclear fuel each year. That means the U.S. wind industry may well have created more radioactive waste last year than our entire nuclear industry produced in spent fuel. In this sense, the nuclear industry seems to be doing more with less: nuclear energy comprised about one-fifth of America's electrical generation in 2012, while wind accounted for just 3.5 percent of all electricity generated in the United States.

While nuclear storage remains an important issue for many U.S. environmentalists, few are paying attention to the wind industry's less efficient and less transparent use of radioactive material via rare earth mineral excavation in China. The U.S. nuclear industry employs numerous safeguards to ensure that spent nuclear fuel is stored safely. In 2010, the Obama administration withdrew funding for Yucca Mountain, the only permanent storage site for the country's nuclear waste authorized by federal law. Lacking a permanent solution, nuclear energy companies have used specially designed pools at individual reactor sites. On the other hand, China has cut mining permits and imposed export quotas, but is only now beginning to draft rules to prevent illegal mining and reduce pollution. America may not have a perfect solution to nuclear storage, but it sure beats disposing of radioactive material in toxic lakes like near Baotou, China.

Not only do rare earths create radioactive waste residue, but according to the Chinese Society for Rare Earths, "one ton of calcined rare earth ore generates 9,600 to 12,000 cubic meters (339,021 to 423,776 cubic feet) of waste gas containing dust concentrate, hydrofluoric acid, sulfur dioxide, and sulfuric acid, [and] approximately 75 cubic meters (2,649 cubic feet) of acidic wastewater."

## Conclusion

Wind energy is not nearly as “clean” and “good for the environment” as the wind lobbyists want you to believe. The wind industry is dependent on rare earth minerals imported from China, the procurement of which results in staggering environmental damages. As one environmentalist told the *Daily Mail*, “There’s not one step of the rare earth mining process that is not disastrous for the environment.” That the destruction is mostly unseen and far-flung does not make it any less damaging.

All forms of energy production have some environmental impact. However, it is disingenuous for wind lobbyists to hide the impacts of their industry while highlighting the impacts of others. From illegal bird deaths to radioactive waste, wind energy poses serious environmental risks that the wind lobby would prefer you never know about. This makes it easier for them when arguing for more subsidies, tax credits, mandates and government supports.

Source: IER

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