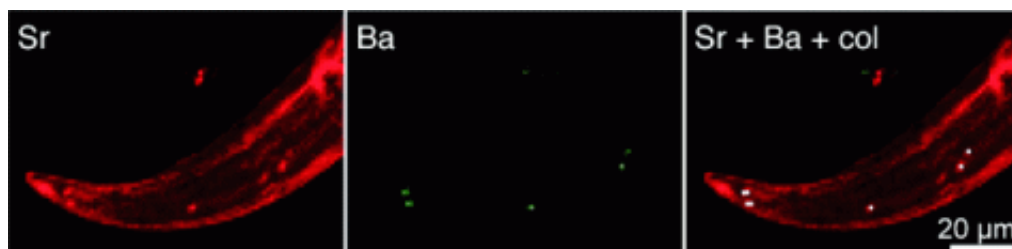


Research shows some algae might help reduce nuclear waste

March 31 2011, by Bob Yirka



(PhysOrg.com) -- New research conducted by Minna Krejci and her colleagues at Northwestern University in Chicago, and published in *ChemSusChem*, suggests that the algae, *Closterium moniliferum*, might one day soon be used to help separate strontium from calcium in nuclear waste. If successful, the process could lead to a reduction in the amount of nuclear waste that is left over from nuclear power facilities, and might even help in cleanup when accidents occur such as the one in Chernobyl, Ukraine, that spewed great quantities of strontium into the surrounding environment (but not like the current situation in Fukushima, because there the problem is xenon and iodine). This is important because the amount of waste is piling up; currently around hundred million gallons of toxic sludge exist in just the United States.

The distinctive crescent shaped freshwater algae have been observed removing strontium from water and then depositing it as crystal

structures in vacuoles (thin membrane organelle). Researchers suspect the algae developed this ability as a means for separating out [calcium](#), which it doesn't want, from barium, which it does. But since strontium sits between calcium and barium in atomic structure it gets swept up with the barium, while the calcium gets left behind. The end result, is vacuoles full of crystals that can be collected and stored as [nuclear waste](#), while the relatively harmless calcium can be processed or stored in other less secure ways.

[Strontium](#), or more precisely, strontium-90, a radioactive isotope, (which has a half-life of 30 years) is particularly dangerous to human beings because it so strongly resembles calcium, which means the body treats it the same way; because of that it can easily get into milk, bones, bone marrow, blood and other tissues, causing hard to treat cancers.

It's not yet known what effect exposing the algae to strontium90 will have over time, but Krejci notes in her paper, even if the algae are killed in short order, she suspects they will be able to live long enough to produce some crystals which can be separated from the general sludge created by nuclear plants, which is enough, because *Closterium moniliferum* can be easily cultured, thus providing a constant stream of new [algae](#) to continue the process.

More information: Krejci, M. R., Finney , L., Vogt, S. and Joester, D. , Selective Sequestration of Strontium in Desmid Green Algae by Biogenic Co-precipitation with Barite. *ChemSusChem*, n/a.
[doi:10.1002/cssc.201000448](https://doi.org/10.1002/cssc.201000448)

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Citation: Research shows some algae might help reduce nuclear waste (2011, March 31)
 retrieved 10 April 2024 from <https://phys.org/news/2011-03-algae-nuclear.html>

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