HYDROXYAPATITE BARRIERS FOR RADIONUCLIDE CONTAINMENT

TECHNOLOGY READINESS LEVEL: 5

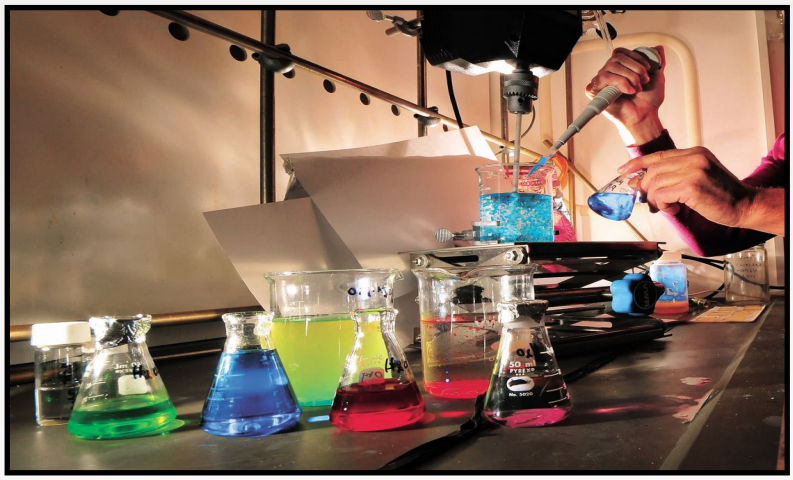
KEY ELEMENTS HAVE BEEN DEMONSTRATED IN RELEVANT ENVIRONMENTS.

US PATENT # 6,416,252 &
US PATENT # 6,592,294

TECHNOLOGY SUMMARY

Apatite, which has been shown to effectively bind and immobilize radionuclides, can also be used to form barriers in water and soil in contaminated environments. The apatite barrier is formed in situ in soil by injection of chelated calcium, phosphate and fluoride solution. In situ formed apatite can be used to sequester actinides, strontium, lead, heavy metals and other compounds that react with apatite.

This technology has been effectively applied at the Hanford site to create a barrier between the contamination areas, ground water, and nearby water sources such as the Columbia River. Due to the rising and falling of the water levels of the river, containment and an effective barrier is imperative to protecting from the spread of contamination. This technology has been shown to reduce the risks associated with sites containing hazardous materials and can be a critical component in maintaining a safe environment, protecting natural resources, and further mitigating associated risks.



POTENTIAL APPLICATIONS

- Ground and surface water protection of contaminated sites
- Radioactive waste clean up
- Containment of radionuclides

TECHNOLOGICAL BENEFITS

- Contains the "holds" compounds that react with apatite which are hazardous to the environment
- Most effective method in the cleanup at Hanford site
- Creates a barrier in soil and groundwater

TECHNOLOGY INQUIRY?

For more information or licensing opportunities contact us at

ip@sandia.gov

Refer to SD # 6412 or SD # 6883

or visit

https://ip.sandia.gov

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