

BioAg OrgoClay “bentonite with activated humic substances “
By Robert H. Faust PH.D Agroecologist.

Humic acids have been proven to be effective at removing heavy metals and *radionuclides* from wastewater streams and the soil. It has been known for decades in Russia that humic substances are the key to reclaiming contaminated soils and preventing radioactive isotopes from entering the food chain in the event of a fallout event. The combination of Activated humic substances and sodium bentonite is even better because the clay retains by binding the *radionuclides* and heavy metals for extended periods of time or until they are no longer a risk factor. The KGB of the Soviet Union had records of every Humate /humic substance deposit in the world. The reason was clear. Humic substances complex and bind toxic elements including radioactive particles and prevent up take by food crops- the only way to make agricultural production safe after radioactive fallout. Our activated humic acid product has been shown to be effective at removing radioactive elements from wastewater streams. Humic substances are used for binding *radionuclides* and have been tested by U.S based nuclear research labs like the Savanna River lab. Recent research has shown that the combinations of certain types of bentonite clay combined with activated humic acids is the most effective combination to “tie-up” or retain radionuclides (1).

Professor Kim Tan of U. Ga. in his book, Environmental Soil Science says “A more efficient and cost-effective method is using humic acid or smectite. Of the two, humic acid is of special importance because it has higher cation exchange capacity than smectite. It’s chelation capacity, which permits it to hold the pollutants with stronger bonds than the usual electrostatic attraction by inorganic colloids, is an additional benefit. Results from the experiments with water, containing 10 kBq/ml of either ^{137}Cs , ^{90}Sr , ^{169}Yb , or ^{51}Cr , indicated that humic acid has completely removed the radioisotopes from the solution, and radioactivity in the water was reduced for 99.0 to 99.8% (Gerse et al., 1994). Radioactive water from the Chernobyl nuclear reactors would have been cleaned rapidly had humic acids been used”

Our new product is a combination of the best humic substances and high quality special powdered bentonite from Oregon. New data proves that the combination of humic acid and bentonite clay is the best and most economic method of binding radionuclides. BioAg OrgoClay is applied to the soil or dusted on plants to intercept radioactive fallout and heavy metals and

pollution like mercury from coal-fired power plants. The combination of bentonite and humic acids can be mixed with animal feeds/food and prevent the up take of the *radionuclides* and heavy metals by the intestinal tract and the toxic elements are passed through the digestive system harmlessly. When applied in a thin layer to the soil surface the OrgoClay will remove the toxic elements which will be fixed to the organo-clay structure and is prevented from entering the soil and being taken up by plants or leaching into the ground water. Polluted ground water can also be treated with the organo-clay to remove radioisotopes and metals. The product is also very effective at cleaning up oil spills and reclaiming polluted land.

There is a large amount of data on the web documenting the effect of humic substances and clay on toxic elements including *radionuclides*. I suggest you do your own research on the use of these products. We cannot make health claims for these products. Humic substances and healing clays are used by people all over the world for centuries and considered safe and effective. Humic/clays “tie-up” toxic substances in their structure and prevent biological systems (cells) from up-taking these cellular toxins as well as most viruses.

References:

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ADSORPTION OF AM-241, CS-137 AND SR-90 RADIONUCLIDES
WITH BENTONITE-HUMIC ACID IMMOBILIZED YIELD

Kris Tri Basuki, Muzakky Muzakky

Retention of radionuclides by mobile humic compounds and soil particles

John C. Sheppard, Malcolm J. Campbell, Todd Cheng, James A. Kittrick
Environ. Sci. Technol., **1980**, *14* (11), pp 1349–1353

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Use of humic substances to remediate polluted environments: from theory to Practice

By Irina V. Perminova, Kirk Hatfield, Norbert Hertkorn

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Environmental soil science, 2000 by Professor Kim H. Tan

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