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## GRN049689 Artificial Soil from Wastewater Sludge

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- Low cost, *biological* treatment
- Simple processing
- No thermal or other energy requirements
- No special equipment
- Permanent odor elimination
- Permanent pathogen elimination
- No further treatment required
- **GREEN**

**Soil is:**

- Safe for use as landfill or for landscaping base
- Safe for use as mining backfill to prevent acid mine drainage
- Safe for covering gravel pits and aggregate mining

Our product provides an effective biological solution for stabilizing sewage sludge for use as artificial soil.

- Employs novel technologies for blocking and sequestering heavy metals and sulfur contaminants:
  - Bio-active marine algae: *Ascophyllum nodosum*
  - PLUS micronized bio-media: natural volcanic cristobalite
    - Both provide ion-exchange capacity - biological + physical/chemical
    - Binds and sequesters heavy metals at a molecular level
    - Both are negatively charged and "offer" negative ions to cation (positively-charged) elements in the soil (Cadmium, Chromium, Copper, Lead, Nickel, Mercury, Zinc)
    - Ion-exchange also eliminates VOC's / organic odors in unstable sludge
- Our product provides an extremely low-cost, innovative solution to sewerage sludge use – a technological leap in sludge treatment and re-cycling.
- Soil meets EEC heavy-metal restrictions for use on arable land
- A low-cost alternative to solidification and thermal desorption technologies
- Provides a permanent solution to:

- Sludge odor and pathogen elimination
- Mining back-fill and acid mine drainage prevention
- No special equipment required

## **Protocol**

- Sludge must be analyzed to determine:
  - Contaminant content and levels
  - Organic content and whether pre-treatment should be done to further mineralize the sludge
- **Sludge is mixed with our additive at a rate of 0.2l / m<sup>3</sup> of sludge, and then mixed 1:1 with soil or a mix of soil and construction waste.**
- Artificial soil is then ready to use as landfill, mining cover, etc.
- Artificial soil can be Hydro-Seeded or landscaped and will support plant life without danger of heavy metal contamination in plants and water run-off.

Our full product line is certified ORGANIC under the European Community regulations, which governs organic production, labeling and control of animal and human feedstuffs. All of our products can be sold and used in the eco-systems of agriculture in all member states of the European Community without special permission.