What Are Biosolids?

Biosolids are the nutrient-rich, natural by-product of wastewater treatment. They are highly processed and analyzed to ensure their safety. Biosolids are generally used in one of four forms: as a nutrient-rich moist solid, dried pellet, liquid, or compost. They’re generally recycled as a soil amendment, but may also be used as landfill cover, and as an alternative energy source.

Class A biosolids contain undetectable levels of pathogens prior to land application or public distribution. Regulatory safeguards ensure that Class B biosolids are also safe to use even though they may have minimal levels of pathogens. Drying, sunlight, and other natural processes cause pathogens to die rapidly when applied to soils. Rigorous treatment, management practices, and regulatory oversight for both Class A and Class B biosolids minimize the possibility of attracting any carriers of pathogens.

Land-applied biosolids must meet federal and state standards. Virtually all California biosolids fall far below the risk-based limits for all pollutants. This is in large part due to the successful implementation of strict pre-treatment requirements enacted in the 1980s.

Californians generated approximately 688,000 dry metric tons of biosolids in 2014; the majority of which went to land application.

How Are Biosolids Produced in California Managed?

Environmental Benefits of Biosolids

• Improves soil quality and health, and increases crop yields.
• High water-holding capacity which improves the soil’s ability to absorb and store moisture, reducing the need to irrigate and providing natural drought resistance.
• Sequesters carbon in the soil and reduces greenhouse gas emissions and energy consumption as compared to the production of fossil fuel based inorganic fertilizer.
• Lowers commercial fertilizer use and expense.
• Can help reclaim fire ravaged land, superfund mine sites, overgrazed rangeland, and deforested areas.
• Can be treated for use as a supplemental or direct fuel source to create energy.
• Can be used as a landfill cover, reducing the use of clean soil and other valuable materials.

How Are Biosolids Managed?

• Comprehensive state and federal regulations govern the recycling of biosolids and ensure public safety.
• Trained personnel conduct quality testing at wastewater treatment plants to ensure all biosolids meet or exceed regulatory standards before use.
• Enclosed trucks transport biosolids.
• Biosolids are the most highly regulated materials applied to land. Class B sites include buffer zones, limited public access, and harvesting restrictions. Class A biosolids are further regulated comparably to commercial fertilizer.
Waste to Energy Benefits

- Anaerobic digestion, used in treating almost all biosolids, produces methane, which is then used as a fuel source to power treatment plant operations. Excess power can be sold to the grid. Methane can also be converted to low carbon transportation fuel or injected into common carrier pipelines.
- Biosolids can be used as an alternative fuel in place of coal in industrial processes, such as the cement industry.
- Biosolids can produce energy directly via innovative technologies.
- The energy thus produced from solids reduces the need for fossil fuels and reduces greenhouse gas emissions.

Public Policy Issues

- Public policies must support biosolids recycling through land application, composting and other energy and resource recovery means.
- Federal, state and local regulations reflect the findings of scientific research and should assure the public of the safety and value.
- Since federal (40 CFR 503) and state (General Order) regulations are based on sound science through exhaustive research, local regulations should be consistent with them.
- Some members of the public have voiced concern over the land application of biosolids in some parts of California. Best management practices should always be employed to assure the public that due diligence is given to their concerns.
- The fact that biosolids land application and beneficial use is one of the most successful recycling programs in the nation should be communicated frequently. Some rural residents view the practice as an urban “dumping” program. The tremendous benefit that farmers and soil realize by recycling biosolids to land should be clearly articulated.
- Biosolids possess energy and climate change mitigation potential, which should be utilized to the greatest extent possible.

What Major Laws Regulate Biosolids?

- US EPA’s risk and technology-based regulation is found in 40 CFR part 503
- California State Water Resource Control Board’s General Waste Discharge Requirements (WDR) known as the “General Order”
- California Department of Resources Recycling and Recovery (CalRecycle) composting facility permits
- Local ordinances and permits, including Regional Water Board WDR’s

Who Oversees Biosolids Generation and Management?

- Local public agencies that produce biosolids
- Regional Water Quality Control Boards
- State Water Resources Control Board
- California Department of Resources Recycling and Recovery
- Air Pollution Control & Air Quality Management Districts
- US EPA Region 9
- Local enforcement agencies

For More Information

- California Association of Sanitation Agencies
  www.casaweb.org
- California State Water Resources Control Board
  www.swrcb.ca.gov/programs/biosolids
- US Environmental Protection Agency
  www.epa.gov/owm
- US EPA Region
  www.epa.gov/region9
- Local Wastewater Treatment Plant websites
- National Biosolids Partnership
  www.biosolids.org