BACWA BAY AREA CLEAN WATER AGENCIES

BAY AREA BIOSOLIDS

A NATURAL RESOURCE

What Are Biosolids?

Biosolids are nutrient-rich organic materials that come from the community's sewage and are treated in wastewater treatment facilities. Biosolids are a valuable resource that can be used as a fertilizer, soil amendment, landfill cover, or in energy generation. Federal, state and local regulatory agencies tightly regulate biosolids treatment and ensure proper application of their reuse and disposal. BACWA member agencies use management practices for biosolids that are cost efficient, environmentally sound and sustainable.

Types Of Biosolids

There are two classes of biosolids that are defined by levels of pathogens, such as certain bacteria, viruses and parasites (Clean Water Act, Title 40 of the Code of Federal Regulations, Part 503):

- **CLASS A** biosolids contain undetectable levels for essentially all pathogens and are used as fertilizers or soil amendments with buffer requirements. Biosolids that meet the most stringent EPA Exceptional Quality (EQ) requirements for 9 regulated pollutants (from arsenic to zinc), are safe for unregulated use. No site controls are needed when Class A EQ biosolids are used as fertilizers or soil amendments, and they can be distributed to farmers and the general public (e.g. for use in community gardens).
- **CLASS B** biosolids may have low levels of pathogens which rapidly die off when applied to soils, and are equally as safe as Class A biosolids when specified management practices are followed.

Processed biosolids can be used in a number of different and benefical ways.

Ensuring Biosolids are Safe for the Community

Biosolids are tightly regulated by the Environmental Protection Agency, the California Department of Health Services, San Francisco Bay Regional Water Quality Control Boards, CalRecycle, and the Bay Area Air Quality Management District. For more information visit water.epa.gov/polwaste/wastewater/treatment/biosolids/index.cfm

Below are contaminants that are monitored by regulatory agencies:

PATHOGENS are not found in Class A biosolids. Class B biosolids may have low levels of pathogens that rapidly die off when applied to soils.

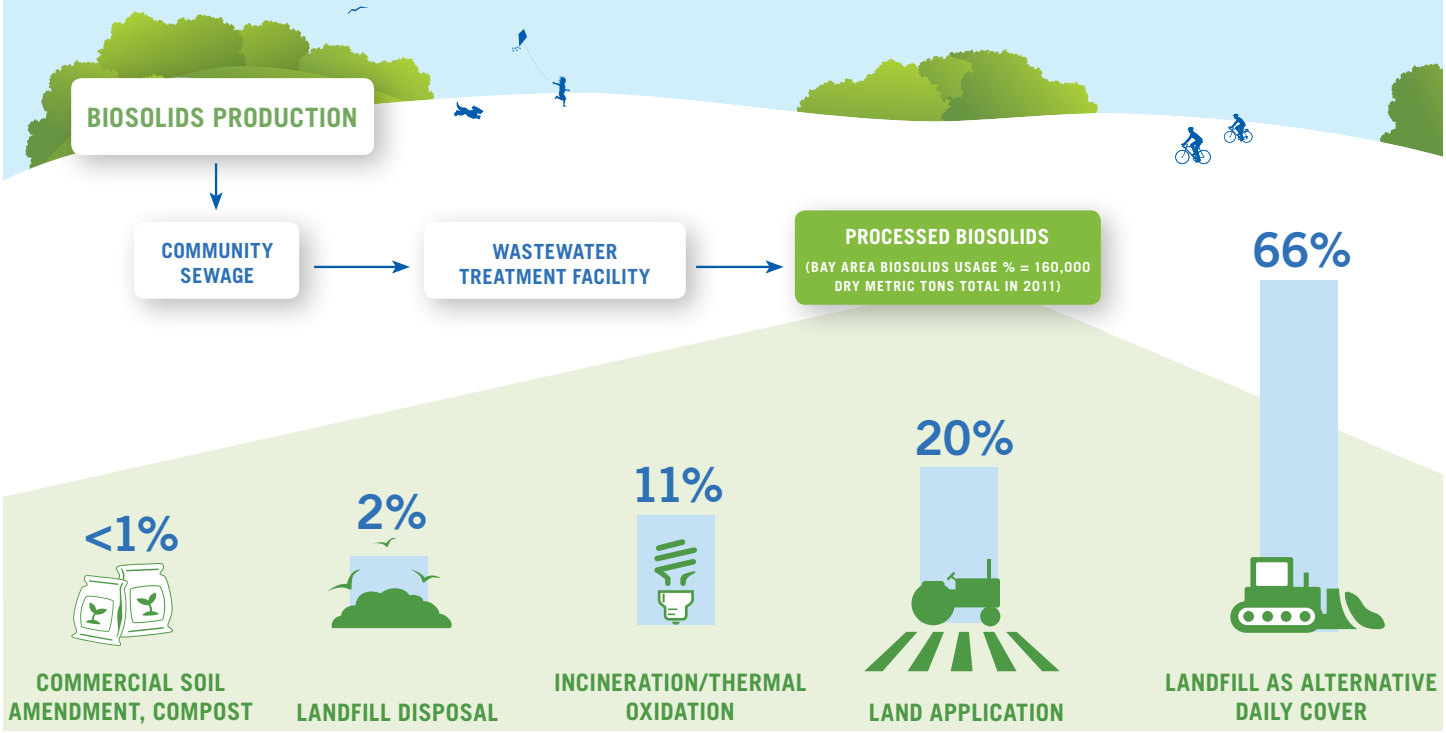
METALS such as nickel, zinc and copper can be found in biosolids. All wastewater treatment plants have extensive pretreatment and monitoring requirements for industrial and commercial facilities so that metals and other pollutants are reduced or removed before the wastewater is discharged to the treatment plant. Any metals remaining in the Class A and Class B biosolids are below the thresholds set by the EPA and not a risk to human health or the environment when properly used.

CONTAMINANTS OF EMERGING CONCERN (CECS) are chemicals found in biosolids from sources such as pharmaceuticals and personal care products. Many CECs rapidly oxidize in soil and break down into innocuous compounds. Wastewater treatment plants in collaboration with the US EPA and the Water Environment Research Foundation have been conducting research on CECs as they relate to biosolids to better understand what is in the biosolids and whether there is any risk to human health or the environment. More information can be found at www.kingcounty.gov/environment/wastewater/Biosolids/BiosolidsRecyclingProjects/Research.aspx

IMPACTS TO GROUNDWATER are minimized by proper management practices which are required by operating permits. These practices include ensuring proper application levels, maintaining buffer zones between application areas and surface water, and following soil conservation practices. In addition, the organic forms of nutrients in biosolids are less water soluble than chemical fertilizers and less likely to leach into groundwater or run off into surface water.

Reusing Biosolids to Benefit the Community

Because of the climate in Northern California and the desire to reduce greenhouse gas emissions, Bay Area biosolids producers recycle biosolids in a number of different and beneficial ways.



COMMERCIAL SOIL AMENDMENT, COMPOST

Creation of bulk and bagged compost is required to meet all Class A biosolids requirements. This material can be sold and is used by farmers, community gardeners and landscapers.

LANDFILL DISPOSAL

Some biosolids are disposed of in landfills. While this option provides a low-cost disposal option, landfill space is limited and many biosolids producers have moved away from this option towards options that provide a beneficial reuse.

INCINERATION/THERMAL OXIDATION

Biosolids have a bioenergy value of 10,000 to 12,000 BTUs per pound of volatile solids. While systems to harness the bioenergy in biosolids require significant investments in managing air pollutants, these systems can provide renewable energy to a community and dramatically reduce the volume of biosolids by converting them to an inert ash suitable for a number of beneficial uses.

LAND APPLICATION

Land application of biosolids benefits Bay Area agriculture by improving soil productivity through increased organic matter, moisture holding capacity, and overall soil structure. This use reduces dependence on inorganic fertilizers and the high energy demands for their production. Long-term land application of biosolids has also been shown to enhance soil microbial activity and increase soil macro nutrients.

LANDFILL AS ALTERNATIVE DAILY COVER

A beneficial reuse for biosolids is Alternative Daily Cover (ADC) for solid waste landfills in California. ADC is a mixture of biosolids and soil to cover the open face of a landfill every day to reduce community health risks. This is an environmentally beneficial alternative for landfills that might otherwise need to import additional soil or other organic wastes for cover material.

What are the future opportunities for using Biosolids?

The San Francisco Bay Area is a recognized leader in innovation and technology. Bay Area wastewater agencies are using new technologies to create renewable energy and fuel from biosolids to help reduce greenhouse gas emissions and contribute to a green economy. Currently, most Bay Area wastewater treatment plants successfully generate methane gas from biosolids through anaerobic digestion to support their energy needs.

BENEFICIAL REUSE Biosolids contain valuable energy and nutrient resources after digestion. Continuing to use biosolids as a soil amendment provides the opportunity to utilize valuable nutrients, including phosphorous of which supplies are becoming more and more limited.

RESOURCE RECOVERY - Bay Area Biosolids to Energy Eighteen San Francisco Bay Area agencies, representing 3.5 million residents, have come together to explore opportunities to diversify biosolids management options with the development of a regional facility that will use biosolids and other biofuels to generate renewable energy. For more information visit www.bayareabiosolids.com/

Land application operations improve soil productivity through increased organic matter, moisture holding capacity, and overall soil structure.

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