

Biological Soil Amendments of Animal Origin (BSAAO) & the Produce Safety Rule¹

What is a BSAAO? A soil amendment intentionally added to the soil to improve the chemical or physical condition that contains an animal ingredient (manure, blood meal, bone meal, etc.).

How to make treated a BSAAO?

A treatment process that meets *Listeria monocytogenes*, *Salmonella* species, and *E. coli* O157:H7 microbial standards (**for example scientifically valid heat-treated animal by-product**) or a treatment process that meets *Salmonella* species and fecal coliform microbial standards (**turned or aerated composted animal manure**)².

What is an untreated BSAAO?³

- A BSAAO that has not been fully processed
- Has become contaminated after treatment or
- Has been recombined with an untreated BSAAO or has become contaminated.

Hazard Level	Treatment Type	Application Method	Time Interval
High	Untreated	Does not contact produce during application and minimizes the potential for contact after application	Currently under review. Best practice is the National Organic Program: 90/120 day rule ⁴
Medium	Untreated	Does not contact produce during or after application	No time interval before harvest
Medium	Treated—turned or aerated composted animal manure	Minimizes potential for produce contact during and after application	No time interval before harvest
Low	Treated—a scientifically valid treatment such as heat, chemical, or physical	Unrestricted	No time interval before harvest

How to handle BSAAO? Handle in a manner, and train workers to handle in a manner, that it does not become a potential source of contamination to covered produce, food contact surfaces, areas used for a covered activity, water sources, water distribution systems, and other soil amendments.

What records to keep for treated BSAAO?⁵ If you get BSAAO from a third party, receive and maintain: (1) records of the process to treat the BSAAO and (2) that the BSAAO has been handled, conveyed, and stored to minimize risk of contamination by an untreated BSAAO. If you produce your own BSAAO, keep records documenting the validated treatment process (time, temp., and turnings).

<https://resources.producesafetyalliance.cornell.edu/documents/FSMA-PSR-Documentation-Requirements-for-Commercial-Soil-Amendment-Suppliers.pdf>

<https://resources.producesafetyalliance.cornell.edu/documents/Records-Required-by-the-FSMA-PSR.pdf>



¹ For more information on safe handling of BSAAO, see 21 CFR Subpart F, §§ 112.51-112.60.

² For more information on how to safely treat a BSAAO, see 21 CFR §112.54 (a-b).

³ For more information on what is an untreated BSAAO, see 21 CFR §112.51(b).

⁴ Application of manure to organic crops is restricted by what is known as the 90-120-day rule. You may not apply raw, uncomposted livestock manure to food crops unless it is: (1) Incorporated into the soil a minimum of 120 days prior to harvest when the edible portion of the crop has soil contact; or (2) Incorporated into the soil a minimum of 90 days prior to harvest of all other food crops.

⁵ For more information on what records to keep to document your BSAAO use and handling, see 21 CFR §112.60

Questions? Contact the Maryland Department of Agriculture at 410-841-5769, produce.safety@maryland.gov

Funding for this work is supported by the Food and Drug Administration (FDA) of the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award U2FFD007444 totaling \$523,497 with 100 percent funded by FDA/HHS. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by FDA/HHS, or the U.S. Government.