

BioScientific, Inc.

BioSecurity, Ground Security and Manufacturing Guidelines

This document serves as the policy guidelines for the security of BioScientific (BioSci) products, premises and customers. Threats to security come in the form of both intentional and unintentional contamination of products in the manufacturing process including agroterrorism .

Product security is the assurance that the product is free of contamination. Contamination includes unwanted compounds, but is mainly the assurance that the product is free of the most prevalent plant and animal diseases. Quality assurance is maintained by exclusion, sanitation and monitoring. Proof of success is monitored by independent accredited laboratory testing. Testing results measures the success of our program and assured safety for the end user.

BioSci recognizes that Biosecurity is what each manufacturer can do to reduce the chances of an infectious disease, whether a plant disease or animal disease, from being carried onto the manufacturing facility by people, animals, ingredients, equipment, or vehicles, either accidentally or intentionally.

Section A - Manufacturing Security begins with site security

The threats of contamination make us all aware of the need for enhanced biosecurity in agricultural industries. Indeed, the safety of the food supply has to start at its source. Intentional destruction or poisoning of ingredients in an act of agroterrorism is a possibility manufacturers must guard against. All manufacturers must establish facility security and in turn, biosecurity protocols to protect their property and ingredients from acts of agroterrorism. Increased biosecurity awareness and protecting against possible intentional acts, will prove to prevent even unintentional breaches of biosecurity.

Intentional or unintentional threats to agricultural facilities may occur by four basic means:

1. Biological, including bacteria, toxins, viruses, parasites, and fungae
2. Chemical including classical chemical warfare agents, pesticides, rodenticides, heavy metals, etc.
3. Radiological (agents that can be delivered as solids or liquids)
4. Physical (glass, metal, and plastic)

1. BioScientific: Security of the Buildings and Grounds:

The physical security of the building and grounds is a vital step in ensuring facility biosecurity. Security risks should be assessed and steps taken to control those risks. At BioScientific security issues have been recognized and dealt with as follows:

- BioScientific has only one entry/exit road. That entrance is clearly marked with signs and for added security has a lockable gate with controlled gate access.
- Security lighting and perimeter fencing are in place.
- Electronic security devices such as motion detectors are used around storage areas. System includes door alarms on buildings, video cameras, and alarms linked to an off-site central monitoring system.
- Critical storage areas are locked with a padlock when not in use and have limited entry.
- Entry prevention devices are installed on exterior ladders to prevent unauthorized use and to prevent access to the top of bulk storage tanks.
- The entry and discharge points of exterior liquid tanks (whether above or below ground) are padlocked when not in use.
- All vehicles are locked at night and whenever there is no one at the plant.
- All unused buildings are locked.
- Designated employees and local law enforcement are notified of any tripped alarms.
- BioSci is involved in area watch program with neighbors. Members mutually watch for trespassers, thefts, or any suspicious activities.
- BioSci employees have been instructed how to contact local emergency personnel.
- Maintenance of Computer files or data systems are crucial and hence have restricted access. Critical data is backed-up offsite. Electronic communications are secured, and virus protection installed.
- BioSci maintains inventory records of equipment and chemicals such as ingredients in case of theft, fire, flood, or agroterrorism.
- Key use is restricted to authorized personnel regarding locked buildings and equipment. Records are maintained as to who has keys.
- BioSci has a written emergency plan, including evacuation plans for all buildings, ingredient inventory and location, utility locations and procedures for shutting them off, including employee procedures during an emergency.

2. BioSci visitor policy.

Visitors, salespeople, trespassers, service personnel, and intruders can all serve as vectors of contamination. All visitors to the plant must check in with a designated company representative.

- Signs are posted indicating where visitors are to report and rules to be followed while on the plant.
- Limited access to areas of the property by designating a specific area for visitor parking.
- Records are maintained of individual's names and companies, arrival and departure times, and the purposes of the visit.
- Restricted access to important area such as ingredient storage.

- Areas containing trade secrets or research are placarded as Restricted. Access to these production areas are on a strict need basis. Workmen or service personal granted access to these areas must be accompanied by BioSci personnel at all times.

3. Employee Security and Awareness.

All employees should practice biosecurity. Everyone must carefully supervise the activities of visitors, service providers, and other employees.

BioScientific biosecurity guidelines for new hire:

- Ask applicants for a resume of their qualifications and to complete a job application.
- Perform background checks to establish a potential employee's qualifications and any criminal record.
- Use a probationary period for new employees to properly evaluate a new employee's work habits.
- Train employees to recognize and report suspicious individuals or unusual activities, security breeches, suspicious materials or devices, and missing equipment.
- Implemented policies on appropriate personal protection equipment as dictated by management and required by law.
- Trained employees properly in their jobs and procedures.
- Train employees about the emergency plan, their responsibilities under the plan, and review it periodically with them.

4. Equipment cleaning and disinfection policy:

Biosci does not lend or borrow equipment. If equipment must go offsite it must be cleaned and disinfected before it is returned.

5. Personal sanitation policy:

Protective gloves are utilized depending on the task. Disposable gloves are recommended when frequent cleaning is necessary.

6. Traffic and sanitation policy:

- Keep visitor and service vehicles from driving over compost handling areas.
- Park all vehicles away from compost areas, preferably on concrete.
- Avoid the transfer of manure, dirt, mud, or other organic material via vehicles.

Section B - Manufacturing Security results in product security

The threats of contamination and infectious organisms can be prevented by the careful screening of ingredients and facility sanitation practices. Evidence of

successful protocols are given by laboratory analysis. An emergency response plan provides a plan of action for undesirable results.

1. Manufacturing sanitation, maintenance and house keeping:

- BioSci products are prepared with potable water supplied by the local municipality.
- Organic ingredients are stored on pallets and pallet shelving above ground in order to prevent rodent infestation. Materials that are stored outside are covered to prevent avian fecal contamination.
- Ingredient specifications in the form of COA (Certificate of Analysis) are provided by manufacturers.
- Daily sweeping is performed in warehouse and decks in production area are washed-down when necessary.
- A rodent eradication program has been implemented. Trapping devices are preferred over baiting.
- Avian repellents are placed in critical overhead areas. Critical areas with no overhead structures are covered.

2. Exclusion, ingredient selection and handling:

Whenever possible food-grade or feed-grade organic ingredients are used in the manufacture of BioSci products. Screening data from the manufacturer is utilized as part of the selection of the ingredient. These ingredients are acquired in large quantities, in order, that they can be tested prior to incorporation into BioSci products. BioSci has organic inputs on hand sufficient to formulate several hundred thousand gallons of final products. Unless a specialty product is being batched, BioSci products are prepared in 5-30,000 gallon batches. This is the basis of a 'Lot' or 'Batch' for post manufacturing screen and release for sale.

Upstream intermediate ingredients are also periodically tested as screening prior to their incorporation into final product. With satisfactory results these intermediates are released to our remanufacturing facilities at Burley, Idaho and Visalia, California.

3. Compost Documentation and Testing Frequency:

As compost is of primary concern as a potential source of infectious agents, we verify with potential suppliers (and obtain documentation) that the process is validated by NOP (Organic) standards. This includes the maintenance of a temperature regime during production of the compost in addition to the microbiological testing as outlined in the table below.

BioSci purchases aged compost whenever possible from reputable historical manufactures. Purchases are made in quantities large enough to allow additional aging on site and for additional testing to be performed. Aged compost has been shown to be less likely to support pathogens.

Each compost lot is tested before incorporation into BioSci's product's. A lot is defined as a truck load of compost weighing 40,000 lbs approximately, 500lbs. per cu.yd., (20 lbs. per cu.ft.) or approximately 80 cubic yards. Compost is sampled upon arrival and only utilized once cleared by microbiological testing.

BioSci's testing regimen involves one sixtieth of the volume (80/5000 cu..ft.) of the industry standards for green leafy vegetable production. Our test is 60 times as intensive.

Compost, Intermediate and End Product Microbial Analysis

Target Organisms:	Acceptance Criteria:	Test Methods:
Fecal coliforms	<10 MPN/gram	Fecal coliforms: 9 tube MPN
Salmonella spp.:	Negative < 3 per 4 grams	Salmonella spp: EPA Method 1682.
E. coli O157:H7:	Negative < 1 per 4 grams	E. coli O157:H7: BAM Chapter 4

BBC Laboratory, of Tempe Arizona, is accredited and certified to perform these microbiological compost and pathogen analysis.

4. Monitoring and record maintenance:

Original sample testing records are maintained by BioSci and by BBC Labs, our contract laboratory. Copies of results for finished product testing will be made available to customers on the www.biosci.com web site.

Besides screening results for product's ingredients, finished product samples are taken on a per lot basis. Lots are assigned according to batches, Each lot/date pertains to product shipped from that date and location to the prior lot/date point. Lots/submitted samples are designated as follows:

- 2-6 letter location (AV=Avondale, VI=Visalia, BU=Burley)
- Product identifier (GP=Guano Plus, ACS=Activat. Carb. Sol., ACE=ACE, etc.)
- Alpha batch/lot code (aa) (Wherein the first letter is the month and second is sequential batch. A is equal to January and number 1. Example: cd is equal to March the fourth lot)
- Numeric batch code:
 - month designation (mm), day date (dd), Year (yy)

Examples: AV GP DA 042707 or VI ACS GB 0715007 or BU HAE DC 042107

For more examples see: <http://www.newfarm.org/columns/inspector/2004/0904/092304.shtml>

At the time of shipments a further, small, sample is gathered and stored for later analysis, if necessary. Every shipment can be traced to a sample and an associated result.

5. Remote manufacturing security and monitoring

Remote manufacturing facilities in Burley and Visalia are provided with verified clean products. However, there remains the opportunity for contamination. Periodic testing of reformulated products will be tested to ensure unintentional contamination.

Personnel will be trained in basic biosecurity protocols and BioSci requirements.

6. Emergency response plan

The entire testing protocol is intended to prevent the release of contaminated product into the supply stream. Actionable contamination may be dealt with in the intermediate product ingredient stage or the finished product stage. In the unlikely event of an undesirable result the following is the basis of a response plan:

- Pre shipment, intermediate stage:
 - Product or ingredient is isolated, secured and red tagged.
 - Immediate retesting is ordered.
 - Additional samples from a larger aliquot are obtained and sampled.
 - Contingent upon favorable re-testing the product is released
 - Contingent upon unfavorable results the product is:
 - Sanitized and reworked
 - Removed from site
 - Land filled or applied to non-food crops
- Post shipment, final product stage:
 - Stop-sale would be issued to customer and arrival would be secured.
 - Outbound reserve sample would receive expedited re-testing.
 - Additional sample from the arrived load would be secured and tested.
 - Contingent upon favorable re-testing the product is released.
 - Contingent upon unfavorable results the product is:
 - Sanitized and reworked
 - Recalled and removed from site
 - Land filled or applied to non-food crops via subterranean application techniques.

7. Conclusions:

The purpose of these protocols is to ensure the highest element of product safety for our customers.

The primary purpose of this document is to serve as the guidelines for BioSci personnel.

The secondary purpose of this document is to communicate to our customer's the level of security involved with BioSci products. Likewise, we encourage customers to comment and suggest improvement to policies and procedures.

The additional purpose of this document is that it may be used by industry as the basis for, or improvement of, biosecurity standards. You may use all or part of this document by referencing this document.