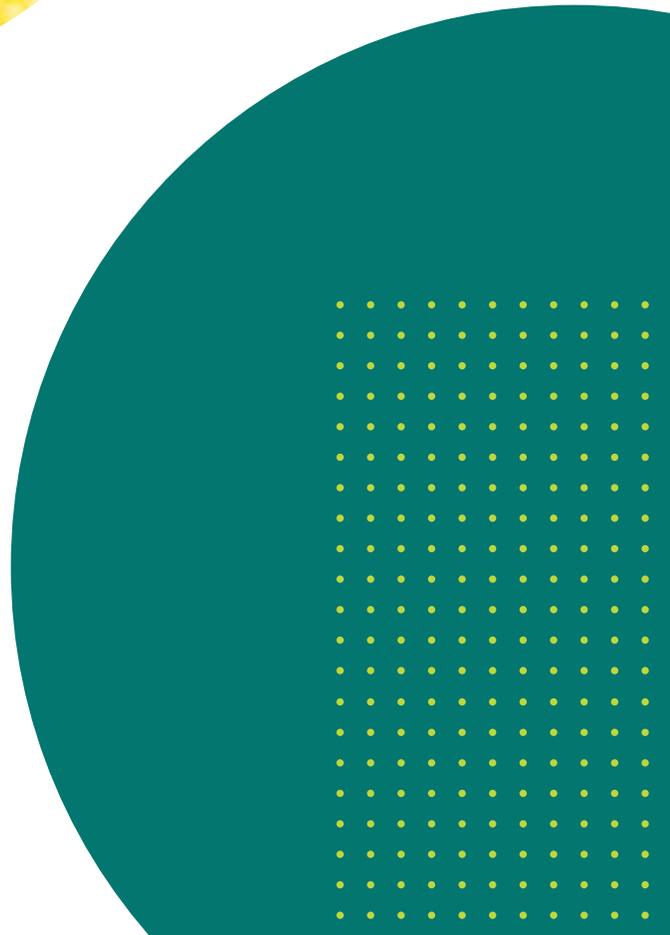
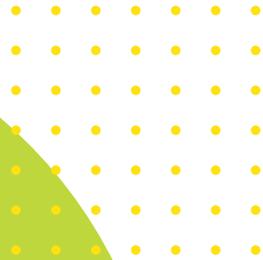




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Guide to Treated Seed Stewardship

Best Practices for the Safe Handling, Storage,
Transportation, Use and Disposal of Treated Seed



Contents

Best Practices for the Safe Handling, Storage, Transportation, Use and Disposal of Treated Seed	4
Definition of Seed Treatment.....	4
I. Introduction	4
Benefits of Seed Treatments	4
II. Facilities, Storage and Employee Training	6
A. Treated Seed Storage – Facility	6
B. Design and Construction	6
C. Facility Operation General.....	6
D. Safety Plans and Equipment	6
E. Storage of Treated Seed – in a commercial facility and on the farm.....	6
F. Bulk Seed	7
G. Bagged Seed	7
H. Treated Seed Spills	7
I. Employee/Personnel Training.....	7
III. Safe Use of Seed Treatment Products, and Safe Handling and Transport of Treated Seeds	8
A. General components of safe handling and use of seed treatments and treated seed.....	8
B. Treating Seed	8
C. Transporting Treated Seed.....	8
D. Handling Treated Seed.....	8
E. Personal Protection Equipment (PPE)	8
IV. Treated Seed Tagging and Labelling	9
V. Environmental Stewardship – Handling and Planting of Treated Seed	10
A. Environmental Stewardship	10
B. Planter Equipment	10
C. Use of Seed Flow Lubricants.....	10
D. Avoid Dust Generation.....	11
E. Planting Depth.....	11
F. Cleaning of Planting Equipment	11
VI. Selection of Treatment Product	12
A. Manufacturer / Consultant Recommendations	12
B. Efficacy	12
C. Effects of SAT on Seed Germination	12
D. Treating Process Recommendations.....	12
E. Ready-to-Use Products vs. Mixtures	12
F. Overtreatment	12
G. Label Directions for Use and Restrictions	12
H. Export Considerations	13
I. Assessment of Treating Properties.....	13



VII. Disposal of Unused Treated Seed or Leftover Seed Treatment	14
A. Small Quantities of Unused Treated Seed.....	14
B. Disposal of Leftover Seed Treatment Products and Empty Containers.....	14
C. Off Farm Disposal of Seed Not Acceptable for Planting and/or Larger Quantities of Pesticide Treated Seed.....	14
D. Environmental Factors of Consideration for Using Treated Seed	15
VIII. Commercial Application of Seed Applied Technology (SAT)	16
A. Factors Affecting Product Integrity and Product Control.....	16
B. Determine Control Points	16
C. Establish Application Processes.....	16
D. Establish Monitoring Procedures.....	16
E. Establish Verification Procedures.....	17
F. Establish Corrective Measures	17
G. Establish Record Keeping and Documentation Procedures	17
IX. Preventing Contamination of Commercial Grain	18
A. Equipment Selection.....	18
B. Bulk Seed Loading	18
C. Equipment Clean-Out	18
D. Documentation	18
E. Third Party Conveyances	18
X. Grower Pesticide application / Provincial courses / Access points to provincial training	19
XI. Glossary of Terms	20
XII. Resources	22
Appendix 1	22
Appendix 2	23
Canadian Seed Growers Association	24
Canadian Seed Trade Association	24

Disclaimer

This document is intended solely as an educational tool to assist product users in developing stewardship practices for treated seed, readers may choose to refer to the entire Guide or specific sections of the Guide as appropriate. This document does not substitute for compliance with, or an understanding of, applicable legal obligations and shall not be construed as legal advice. Readers are encouraged to contact the appropriate regulatory agency or agencies to ensure compliance with applicable requirements. The Canadian Seed Trade Association (CSTA) and the Canadian Seed Growers' Association (CSGA) do not make any warranties or representations, either expressed or implied, regarding the accuracy or completeness of the information contained in this Guide; nor do they assume liability resulting from the use of, or reliance upon, any information, procedures, conclusions or opinions contained in this Guide.

Guide to Treated Seed Stewardship

Best Practices for the Safe Handling, Storage, Transportation, Use and Disposal of Treated Seed

Definition of Seed Treatment

Seed treatment is the application of biological organisms, chemical ingredients or micronutrients to seed to suppress, control, or repel insects, diseases or other pests that attack seeds, seedlings. These products may also be applied to regulate

growth or provide plant health benefits. Seed applied technologies such as, herbicide safeners, seed coatings, colorants, etc. may also be applied to the seed. Treated seed is intended for planting only and not for food or feed or oil uses.

I. Introduction

Many of the things that enhance our quality of life including: an abundant supply of safe and healthy food; cleaner fuels and industrial products; greener spaces; and a healthy agricultural economy have something in common – they started with the planting of a seed. Seed is a compact delivery system for technologies and innovation that contribute both to competitiveness and productivity for the Canadian agriculture and agri-food system and environmental stewardship.

Seed applied technologies are effective tools at protecting and enhancing the seed and plant in its early stages of growth. These products support the seed's genetic performance and internal protection from insect and diseases which can include advanced traits for productivity and end use attributes. These technologies help the plant combat the negative impacts of soil borne pests, helping farmers to produce higher quality crops while minimizing the impact to humans, animals and the environment.

In addition to plant protection and health products, other technologies carried in and on seed can include growth enhancements, plant nutrition, and additionally coatings to ensure that seed treatments stay on the seed.

The Canadian Seed Trade Association and the Canadian Seed Growers' Association, in keeping with our sector's commitment to stewardship of seed and the technology carried by seed both inside and out, have developed this guide to treated seed stewardship. It is designed to serve as an educational tool and to provide general guidance for those involved in the handling, storage, transport, and use of treated seed. While these best management practices are voluntary, the industry strongly recommends that those who are working with treated seed incorporate them into their individual stewardship plans.



This guide was developed to specifically recommend best practices for insecticide and fungicide treated seed. However, the practices suggested in this guide may also be helpful for those making operational decisions on the stewardship of seed enhanced with biologicals, nutrition and/or functional seed coatings (polymers).

The Guide to Treated Seed Stewardship is aimed at assisting users to develop and implement their own stewardship programs to comply with federal and provincial regulations, and to maintain a safe, operationally efficient and environmentally sound operation.

The guide is meant to be a complement to the Accredited Seed Treatment Operations Standards, which are national auditable standards applicable to commercial seed treatment operations that store, handle and apply designated seed treatment products in Canada.

Benefits of Seed Treatments

Grower benefits

- a) Seed treatments protect the intrinsic value of the seed itself as well as genetic expression and, the value of traits added through genetic modification. The result is improved quality and yield potential.
- b) The result is healthier plants that can withstand negative pest or environmental stress. Healthier plants require less intervention from farmers in controlling insect, disease or weed pests.
- c) Accurate placement of treated seed in the seed bed or furrow reduces the risk of environmental exposure to humans and other species.
- d) The volume of product required to treat seed is several factors less than what is required for full field soil or foliar applications, eliminating or reducing trips across the field.



Healthier crops

Seed treatment:

- a) Can contribute to earlier and more efficient planting, higher plant populations and resulting higher yields.
- b) Offers an effective method of protecting seed from soil borne pathogens, and contributes to healthy, uniform stand establishment in a variety of crops. This can reduce or eliminate the need for additional rescue treatments or replanting.
- c) Offers relief from abiotic stress such as cold, wet and drought and improve the plants' performance in the soil biome to avail from nutrition and essential minerals.
- d) Allows the full expression of the genetic potential of the variety.

Positive environmental impact

- a) Seed treatment is compatible with Integrated Pest Management (IPM) practices, through selective and targeted approach to pest control.
- b) In accordance with IPM principles, the use of treated seed can vastly reduce the pesticide loading on a given planting area as the crop protection product is placed on the surface of a small seed, effectively reducing the need to apply products over the entire field.
- c) The precise application of a crop protection product via seed treatment reduces soil surface exposure by up to 90 percent compared to in-furrow applications and up to 99 percent compared to a surface application. An example is in corn where the actual treated area of seed per hectare is less than 6m².
- d) Application is made precisely on the product using modern precision application equipment. This minimizes non-target organism impact.
- e) Polymer seed coatings bind crop protection products directly to the seed, reducing exposure to not only the grower or farmer workers but importantly non-target organisms.



II. Facilities, Storage and Employee Training



Summary: Facility location and building plans must be chosen according to specific rules to ensure security.

A. Treated Seed Storage – Facility

- i) **New Construction** – the facility should be located at least 25 meters from the nearest property line, and at least 30 meters from rivers, lakes, streams and/or environmentally sensitive areas.
- ii) **Existing Facilities/Adding to Existing Facilities** – facilities that are located closer than 25 meters from the nearest property line should have the local fire department or municipality review the location of the facility in relation to surrounding properties for compliance with local regulations. Facilities located less than 30 meters from environmentally sensitive areas should practice frequent operational clean-up procedures and have a plan for containing water and contaminants in the event of an emergency including an evaluation of dyking requirements.

B. Design and Construction

- i) **Access to Facility** – ensure access to facility is restricted to authorized personnel only. Signs should be posted at entrances.
- ii) **Emergency Access** – at least two sides of the facility should have ten-meter free zones to allow for access by emergency response vehicles.
- iii) **Security** – the facility should be secured by lockable doors and windows.
- iv) **Access to Emergency Equipment** – areas/aisles etc. where emergency equipment is located should be kept clear at all times to facilitate access.
- v) **Lighting** – lighting should ensure that information on product labels can be easily read.
- vi) **Fire Detection and Extinguishers** – a monitored fire detection system should be considered for all storage areas. Fire Extinguishers should be located in accordance with relevant Building Code requirements.
- vii) **Exits** – exits should be located in accordance with Building Code¹ requirements. Emergency exits should be clearly marked and posted with exit signs. Access aisles, halls etc. to emergency exits should be kept clear at all times.
- viii) **Damaged or Contaminated Products** – a separate area should be designated and clearly identified for the storage of damaged and/or contaminated products.

C. Facility Operation General

- i) **Isolation/Segregation** – All treated seed should be kept isolated from food, food products, livestock feed and equipment used for food/feed processing and handling. Ensure that lunchrooms, washrooms and offices are separated from treated seed storage areas. Eating and smoking is prohibited in storage areas.

- ii) **Documentation Maintained** – it is recommended that all treated seed facilities maintain the following documentation:
 - Regulatory Information (Transport Dangerous Goods, Workplace Hazardous Materials Information System (WHMIS))
 - Standard Operating Procedures of the facility
 - Required Licences and Permits
 - Inventory Records
 - Employee Training Records
 - Inspection Records
 - Emergency Response Plans
 - Safety Data Sheets
 - Emergency contact information (e.g. poison control, suppliers, first responders, veterinarian)

D. Safety Plans and Equipment

- i) **Safety Data Sheets** – information on the safe handling, storage and use of treated seed and a product identifier (e.g., brand name, code name or the chemical name of the product) for each product in the facility and must be readily accessible either in hard copy or electronically.
- ii) **Safety Equipment** – dust masks, respirators, goggles, gloves and other appropriate safety equipment should be stored in a readily accessible and in a well-marked location.
- iii) **Safety Inspections** – a documented annual safety inspection by the operator or safety officer is recommended for all storage facilities and equipment.
- iv) **Emergency Response Planning** – all facilities should develop a plan for responding to emergencies such as major spills, workplace accident or fires. The plan should be developed in conjunction with local emergency response officials. The emergency response plan should be accessible to all facility personnel and should be in the possession of individuals listed in the plan and of local emergency response officials. Facilities should review the emergency response plan and practice a walkthrough of a simulated emergency at least annually.

E. Storage of Treated Seed – in a commercial facility and on the farm

- i) **Location** – treated seed should be kept in a secure location out of the reach of children, livestock, wildlife and unauthorized personnel.
- ii) **Environment** – the storage area should be well ventilated, well-lit and have adequate temperature control. Protect treated seed from direct sunlight and rain/snow. Ensure that environmental controls reflect storage requirements for seed and seed treatment materials.
- iii) **Safety** – treated seed should be kept separate from flammable products.

F. Bulk Seed

- i) **Bin Foundation and Surface** – bins should be anchored to a secure foundation. Areas under bins should be concrete or asphalt and have a smooth finish to allow for sweeping. If the areas under the bins do not have a smooth finish, an effective method of removing spills should be developed.
- ii) **Bin Construction** – bins should have hopper bottoms to allow for complete clean out. Bins should be lockable to prevent theft and/or vandalism.
- iii) **Load In/Load Out Pads** – a concrete or asphalt pad is recommended around areas where treated seed is loaded/unloaded to allow for clean-up of spilled product.



G. Bagged Seed

- i) **Stacking** – avoid unsafe (leaning/unstable) stacks. A minimum of 1 meter distance should be maintained between the top of stored product and overhead heating and lighting systems.

- ii) **Floor** – floors should be impervious and should have a smooth finish with no floor drains. Drains can be present if they discharge to a separate containment system.
- iii) **Walls** – construction of walls of the storage area should meet appropriate fire and building code requirements.
- iv) **Separation** – treated seed storage area should be separated from seed treatment storage area.
- v) **Heating System** – where seed is stored in a heated area, open flame heaters should not be used. Ceiling furnaces must meet fire and building code requirements.



H. Treated Seed Spills

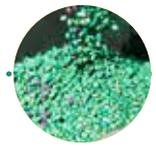
- i) Spills of treated seed should be cleaned up immediately and thoroughly. The greatest potential for seed spillage occurs at the loading site, at the point of entry to the field, and at the turn rows.
- ii) When treated seed spills occur, cover them up with soil immediately to ensure they do not remain available for birds or other animals to consume.
- iii) Scoop or sweep up material and place into a disposal container.
- iv) Spilled treated seed should be stored in a secure labelled container in a separate area until it can be disposed of in an approved manner. (Refer to Disposal of Treated Seed)

I. Employee/Personnel Training

- i) **Training courses** - It is recommended that personnel who are handling treated seed in a commercial facility be given appropriate training in the facility's standard operating procedures and other procedures including but not limited to:
 - Workplace Hazardous Materials Information System (WHMIS)
 - Occupational Health and Safety Rules
 - First Aid/CPR
 - Safety Equipment Use and Management
 - Fork-Lift Operation
 - Emergency Response Procedures
 - Transport Dangerous Goods Regulations and Requirements
 - General site rules, policies and procedures
 - Applicable provincial training and licences

¹ Building codes are based on the National Building Code of Canada, which incorporates the National Fire Code. However codes do vary by some provinces.

III. Safe Use of Seed Treatment Products, and Safe Handling and Transport of Treated Seeds



Summary: Instructions and requirements for the safe use of seed treatment products are detailed on the treatment product label, and, for safe handling and transport of treated seed, on seed tags for the packaged, treated seed. To ensure safety, proper training is required for individuals applying seed treatments and also is recommended for individuals handling and transporting treated seed. Taking steps to ensure the safe handling and transport of treated seeds is a key element of product stewardship to maintain the integrity of the treated seed.

A. General components of safe handling and use of seed treatments and treated seed.

- i) Follow product label instructions for applying seed treatments and instructions found on the treated seed tag.
- ii) Minimize exposure to seed treatments, treated seed, and dust from treated seed.
- iii) For your own safety and to protect the environment, the following precautions should be observed:
 - Signal Word (e.g., “Caution”);
 - Seed treatment product use and disposal restrictions
 - Treated seed plant-back intervals and grazing restrictions;
 - Specific seed planting, storage, and disposal restrictions and recommendations; and
 - In the event of specific product questions or emergency, call the manufacturer’s number as provided.

B. Treating Seed

- i) Read, understand and follow product label instructions and Safety Data Sheets (SDS).
- ii) Use available engineering and system controls to minimize exposure to the seed treatment product and to ensure accuracy of application.
- iii) Maintain and calibrate application equipment.
- iv) Use specified Personal Protective Equipment (PPE).
- v) Ensure workers are adequately trained as per their job function.

C. Transporting Treated Seed

- i) Follow the safety precautions indicated on the seed tag.
Avoid mechanical damage to treated seed and packaging.
- ii) Transport seed in a way that no seeds are spilled during transit.
- iii) Protect seed from heat and moisture.
- iv) Take precautions to avoid spillage when handling.
 - In case of spills, collect the treated seed immediately.
 - Properly dispose of spillage to prevent exposure to humans, animals, or the environment.
- v) Be aware of storage requirements and limitations.
 - Always thoroughly clean truck boxes, trailers and other handling systems that have been used to transport bulk treated seed.

D. Handling Treated Seed

- i) Thoroughly read and follow seed tag instructions. Ensure that all seed tag requirements are met.
- ii) Use specified PPE. Avoid exposure to dust when opening and/or emptying treated seed packaging.
- iii) Ensure handlers are adequately trained with training documentation.
- iv) Properly dispose of any spillage to prevent exposure to humans, animals, or the environment.

E. Personal Protection Equipment (PPE)

- i) When selecting PPE, always read and follow product label and/or seed tag instructions. This may include long pants, long sleeved shirt/coveralls, chemical resistant gloves, shoes and socks, etc.
- ii) Additional PPE may be required for operation of equipment related to Safe Handling and Transport of Treated Seeds - Reference required or suggested PPE as indicated by the equipment manufacturer.
- iii) Additional PPE may include foot, ear, respirator and head protection.



IV. Treated Seed Tagging and Labelling



As prescribed in the Seeds Act and Regulations²:

- i) Any seed that is treated with a pest control product (as defined in the Pest Control Products Act) must be stained with a conspicuous colour to show that it has been treated. Canadian Grain Commission Colour Standards for pesticide seed treatments are pink or red for cereals and baby blue for canola. Seed treated with an inoculant may have a green stain.
- ii) Seed that is treated with a pest control product must be identified with the appropriate signal word and symbol defined in the Pest Control Product Regulations to represent the nature and degree of risk³, along with the following statement: “Do not use for food or feed. This seed has been treated with (insert the common or chemical name of the Pest Control Product).”
- iii) Refer to the seed treatment product label for specific information that is required on the seed tag and for additional labeling requirements. The Canadian Food Inspection Agency requires that seed be labelled in both English and French.
- iv) Seed that is pre-inoculated with rhizobial inoculants must be labelled in accordance with the Fertilizers Regulations. The label on the pre-inoculated seed must contain the following statement. “This product is treated with (species name or genus of the active microorganism) inoculum.”

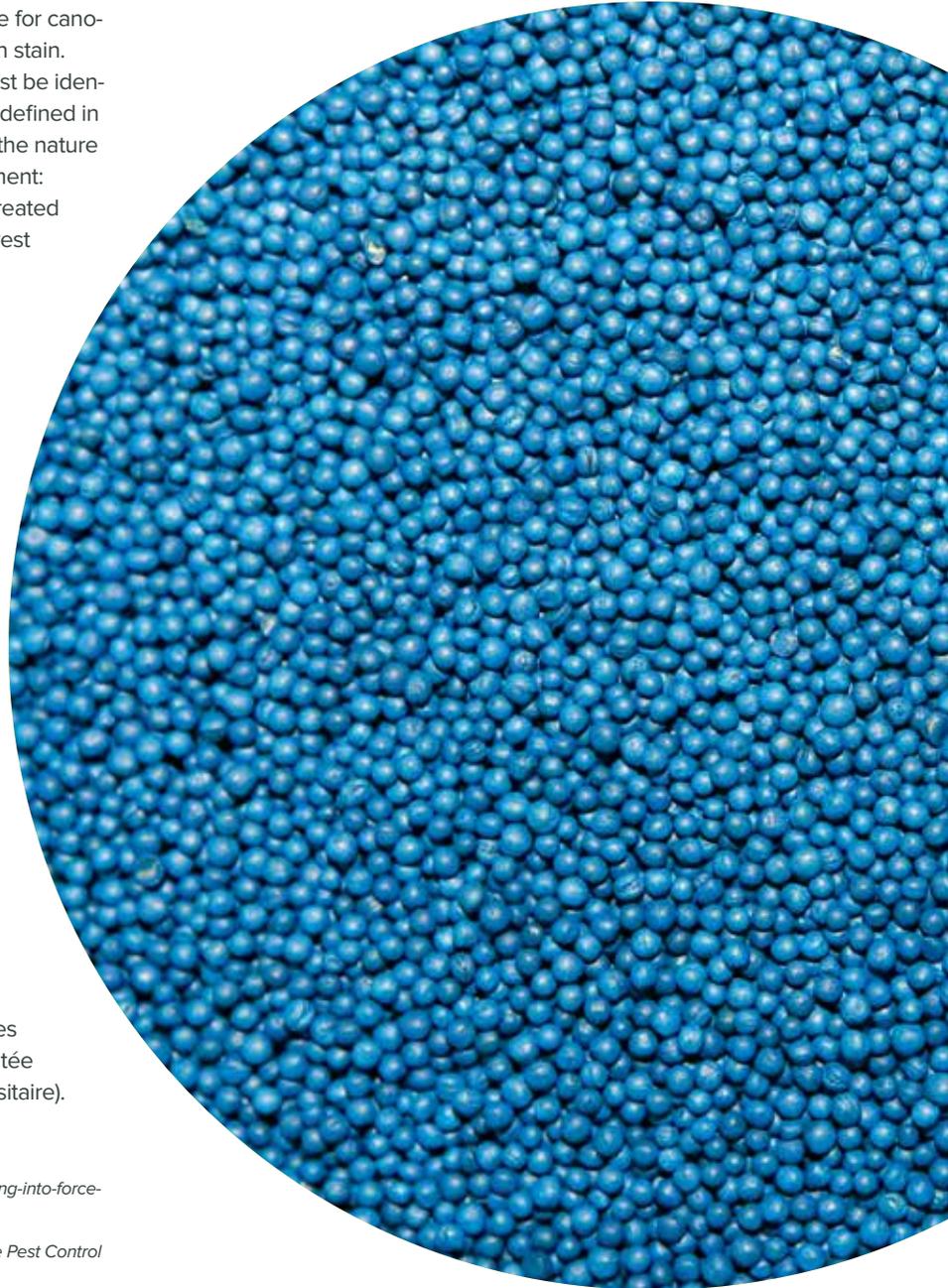
Changes to the bilingual labelling requirements of treated seed will come into force on April 23rd, 2020⁴. As a result of these changes, signal words must be provided in both official languages, and the new bilingual precautionary statement included:

Do not use for food or feed. This seed has been treated with (common or chemical name of pest control product). Ne pas utiliser pour l'alimentation des personnes ou des animaux. Cette semence a été traitée avec (nom commun ou chimique du produit antiparasitaire).

² http://laws-lois.justice.gc.ca/PDF/C.R.C._c._1400.pdf

³ <http://www.inspection.gc.ca/plants/seeds/industry-advisories/coming-into-force-on-april-23-2020/eng/1533672697651/1533672698406>

⁴ See Appendix 1 for the table of symbols and signal words from the Pest Control Products Regulations



V. Environmental Stewardship – Handling and Planting of Treated Seed



Summary: Environmental stewardship involves the management of treated seeds after they leave the seed treatment facility to minimize the risk of exposure to non-target organisms. This includes educational efforts to help ensure that users understand the importance of their activities in protecting the environment. It is essential to educate those who handle, transport and plant the seed to help ensure that seed treatment solutions result in success for everyone involved and to help minimize the potential for adverse effects on the environment. Sensitive environmental factors to be aware of include, but are not limited to, pollinators, pollinator hive locations, flowering habitats including weeds and other plants at field edges, aquatic habitats (e.g., streams/ponds/rivers), wind direction, etc.

Always handle treated seed with the same care and attention as you take when handling other crop protection products. Read and follow the personal safety instructions on the label. Taking the proper measures for planting treated seed is a key component of a comprehensive stewardship plan. Follow Best Management Practices to reduce potential exposure:

A. Environmental Stewardship

- i) Be aware of the presence of honeybee hives and crops and weeds in the flowering stage within or adjacent to the field that could attract pollinators.
- ii) Control flowering weeds in the field prior to planting to ensure that pollinators are not foraging.
- iii) Observe environmental conditions. Dry, windy conditions can carry dust onto flowering crops, weeds or trees.
- iv) Provide pollinator-friendly habitats away from active fields.
- v) Follow planting depth instructions, if found on the seed tag, to protect birds, animals and the environment.
- vi) Ensure that seed that has fallen or spilled out of the planter is covered or removed to protect birds.
- vii) Observe plant back restrictions found on the seed tag.

B. Planter Equipment

- i) Direct planter exhaust downward towards the soil surface, where possible.
- ii) Always plant at the recommended seeding rate.
- iii) Calibrate planting equipment properly.
- iv) Always clean and maintain equipment properly.
- v) Avoid using the same equipment for treated seed and for harvested commodity seed or grain, if the treated seed labeling states it is not for food, feed, oil, ethanol, or other commodity grain channel uses.

C. Use of Seed Flow Lubricants

Certain seed treatments and planting equipment require the use of specific seed flow lubricants.



For example, when planting corn or soybeans treated with a neonicotinoid insecticide using an air/vacuum planter/seeders, Health Canada's Pest Management Regulatory Agency (PMRA) requires that a dust-reducing agent be used. Talc and graphite are still not permitted to be used as a seed flow lubricant in these cases. Carefully follow the use directions provided with the dust-reducing fluency agent.

It should be noted that other lubricants may be used when corn/soybean planting is not done with a vacuum/air planter/seeders. As well, planting equipment (for use in other crops) may have specific recommendations on the type of seed flow lubricants to use to ensure optimal flowability and planter performance. Follow the recommendations of the planter manufacturer for the proper use of other lubricants.

D. Avoid Dust Generation

- i) In addition to careful attention to weather conditions and locations of pollinators, take additional measures to reduce dust at planting.
- ii) Follow planter manufacturer recommendations and consider choosing seed coated with a finishing polymer to bind seed treatments to the seed, to further reduce dust.
- iii) Handle seed bags with care during transport, loading and unloading in order to reduce abrasion, dust generation and spillage.
- iv) Do not load or clean planting equipment near bee colonies or pollinator foraging areas. The planter should be filled at least 10 meters inside the field to be planted, avoiding proximity to apiaries, hedges, or flowering crops or weeds
- v) Pour seeds carefully with your back positioned to the wind and do not shake dust or loose material from the bottom of the seed bag. When turning on the planter, avoid engaging the system near bee colonies or foraging areas.
- vi) Use deflector equipment, where appropriate, to direct exhaust to ground level and reduce the off-field movement of seed dust. Consult with your equipment dealer or the manufacturer to determine whether deflectors are appropriate for your planter and, if so, to identify the appropriate deflector.
- vii) Clean and maintain planting equipment. Use a vacuum to remove seed and dust from the planter, including the fan housing and hopper. Do not use compressed air.

E. Planting Depth

- i) Follow planting depth instructions, if found on the seed tag, to protect birds, mammals and the environment.
- ii) At row ends and field corners, if indicated on the seed tag, incorporate treated seeds at suggested planting depth.
- iii) Cover all treated seeds in the field by incorporating into the soil at proper planting depth, in particular at row ends and field corners.
- iv) Clean-up and Disposal – spilled or exposed seeds and dust must be incorporated into the soil. Do not leave them exposed.
- v) Keep treated seed and dust away from surface water.
- vi) Do not leave empty bags in the environment. Dispose of them in accordance with local regulations. Participate in CLEANfarms collection programs where available.

F. Cleaning of Planting Equipment

- i) Clean planters and seed boxes away from sensitive environmental areas, especially those that are attractive to pollinators, such as field margins with flowering crops or weeds, or near hive locations.
- ii) Use a broom or shop vacuum to minimize dust release. Do not use compressed air.
- iii) Do not discharge rinse water to ground, surface water or septic systems.

- iv) Minimize rinse water - wash out equipment only when necessary.
- v) If possible and will not result in an applied concentration above the label recommendation, reapply excess rinse water from the cleaning of planting equipment to a field site for which the active ingredient is registered.



VI. Selection of Treatment Products



Summary: The selection of the seed treatment product(s), coating materials, micronutrients and/or other additives (“seed applied technology”) affects the performance, health, safety and environmental impacts of seed treatment. Selection of products and combinations should be based on evaluation of significant data demonstrating their suitability for use as a seed treatment and on the application process to be used.

A. Manufacturer / Consultant Recommendations

- i) Manufacturers of seed treatment products, colorants, polymers and other seed treatment/coating additives should be consulted for proper use, application and compatibility of their products.
- ii) In addition, consultants specializing in seed treatment compositions and applications may be used; or the application process and/or seed treatment component combinations may be developed by inhouse expertise.
- iii) Only reputable suppliers/consultants should be used.
- iv) Manufacturers/consultants should provide to seed treatment facilities information to support the effectiveness of their product(s), including data on efficacy, seed safety, flowability, plantability, dust levels of treated seed, and temperature limitations/requirements for the treating process.
- v) At a minimum, treatment uniformity should be demonstrated with visual assessment of treated seed samples.

B. Efficacy

- i) Consult product labels for pests controlled and rates required and use products suitable for the pests of concern.
- ii) Use recommended rates to control pests of concern as defined on the label.

C. Effects of SAT on Seed Germination

- i) Seed germination may be affected by “seed applied technology” and must be verified prior to using a specific product or combination of products.
- ii) Verification of seed safety should include the determination of germination of treated seed over a period of time equivalent to commercial storage of treated seed.

D. Treating Process Recommendations

- i) The application process must achieve accurate and uniform coating of the seed.
- ii) Follow recommendations of suppliers or other experts.
- iii) Use the appropriate slurry volume for the environment conditions at the time of seed treatment.
- iv) Do not treat seed when the environmental or seed temperature is below recommended limitations.
- v) Keep accurate records of all seed treatment applications.

E. Ready-to-Use Products vs. Mixtures

- i) “Ready to Use” products are designed to treat seed effectively without use of additional components other than water.
 - Manufacturers should provide data to demonstrate the performance of these “Ready-to-Use” formulations.
 - If other components are added to a “Ready to Use” product, the compatibility of the combination should be verified.
- ii) “Mixtures” include seed treatment product(s), coating materials, micronutrients, and/or other additives. The specific combination must be evaluated and verified to be suitable. Physical and seed safety compatibility of mixtures should be verified.

F. Overtreatment

- i) Overtreatment is the application of seed applied technology to previously treated seed. Such applications may be in addition to a base commercial treatment to provide protection against pests of concern in the local environment.
- ii) In some cases, previously treated seed may be overtreated with other seed applied technology.
- iii) The suitability of such overtreatments should be verified, including seed safety and dust levels.

G. Label Directions for Use and Restrictions

- i) Comply with all product label requirements.
- ii) Ensure that seed treatment components are compatible with one another.



- iii) When using a combination of products with the same active ingredient (AI), (such as when adding additional metalaxyl to a metalaxyl containing product), ensure that the total rate of active ingredient does not exceed the maximum allowable rate.
- iv) When working with multiple registered products, comply with the most restrictive label requirements of the individual components.

H. Export Considerations

- i) Different countries have different rules for importing treated seed. When exporting treated seed, check regulations for the country to verify that the seed treatment is acceptable for import.
- ii) Provide accurate documentation of any seed treatments applied to seeds for export.

I. Assessment of Treating Properties

- i) Prior to using in a commercial process, the seed applied technology should be assessed in a small-scale process for treating properties including:
 - Uniformity of treatment; and
 - Build-up of treatment material or any other adverse effects on application equipment.
- ii) Alternatively, the treatment may be suitable if it has been used successfully in another similar commercial operation.
- iii) Treated seed from commercial operations should be evaluated for suitability in the following parameters:
 - Uniformity of treatment coating of individual seeds (visual evaluation is acceptable);
 - Presence and amount of treated seed dust;
 - Field application rate of seed treatment; and
 - Any other known pertinent qualities.

VII. Disposal of Unused Treated Seed or Leftover Seed Treatment



Health Canada's PMRA uses a general statement on most treated seed labels: "For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency." For a summary of a search of provincial regulations see Appendix 2.

A. Small Quantities of Unused Treated Seed

- i) Return excess treated seed to its original seed lot containers if the seed is intended for storage and subsequent planting.
- ii) Plant in fallow or other non-cropped areas of the farm in accordance to the seed treatment product label.
- iii) Unless restricted by label language, excess treated seed may be double planted in the turn rows at the end of the field or within a portion of the field at an agronomically acceptable seeding rate.

B. Disposal of Leftover Seed Treatment Products and Empty Containers

- iv) CleanFARMS⁵ operates an unwanted/obsolete pesticide and empty container management programs on behalf of the industry. Unwanted/obsolete pesticide disposal programs are offered in each province every three years and empty pesticide containers can be returned either to point of sale or local landfills (Manitoba and Alberta only) for safe disposal annually from May until October.
- v) Be sure to safely dispose of pesticides. Possibility to return the product to the original supplier if it is unopened.
- vi) To use a surplus spray mix, dilute the remaining spray mix by a 10:1 ration of water/spray mix. Surplus can be applied to the original treated area as long as the pesticide rate recommended on the label is not exceeded. Check the label for any restrictions about crop rotation, days to harvest or surplus spray mix disposal.

C. Off Farm Disposal of Seed Not Acceptable for Planting and/or Larger Quantities of Pesticide Treated Seed

- i) Large quantities of treated seed in sealed and undamaged packages/bags/totes, in many cases, may be returned by the grower to the supplier.
- ii) Consult with your provincial authorities to ensure your disposal plan follows all appropriate regulations.



- iii) Disposal facilities will be required to have a Ministry of the Environment (or similar) permit to accept pesticide treated material (such as treated seed). Whether a waste management facility, power plant, cement kiln, ethanol plant, or municipal landfill is permitted to dispose of seed treated with a particular pesticide can only be confirmed by contacting the facility directly.
- iv) Your seed supplier may also be aware of permitted disposal facilities in your area. Treated seed can be landfilled at a Class I or II landfill if it is classed as non-hazardous waste according to Provincial waste control regulations (see Appendix 2). If it is classed as hazardous waste by provincial regulations, check with provincial waste disposal regulations and agencies to determine if it can be disposed in a Class 1 landfill, and to determine locations of Class 1 landfills.
- v) There is zero tolerance for treated kernels in the commodity grain channel when the treated seed tag states the seed is not for food, feed, or oil purposes.

vii) Disposal of Rinse Water from Seed Treatment Equipment

- Do not discharge rinse water to ground, surface water or septic systems.
- Minimize rinse water - wash out equipment only when necessary.
- Re-use rinse water if possible to dilute the next batch of formulation. Be aware of the potential for cross contamination if the new formulation contains different active ingredients. Factor in the potential for increased concentration of active ingredient, if significant amounts of rinse water are used.
- If possible and will not result in an applied concentration above the label recommendation, re-apply excess rinse water as a pesticide application to a field site for which the active ingredient is registered.

viii) Emergency Planning

- Have an emergency preparedness plan for unintended exposures, spills, or accidents.
- Have any relevant emergency contact information easily accessible.
- In the event of emergency, call the manufacturer's Product Emergency Number.

D. Environmental Factors of Consideration for Using Treated Seed

i) Drift (wind speed/direction)

- Drift is the physical movement of pesticide droplets or particles through the air, from the target site to any non-target site, which could result in Off Target Exposure.
- Avoid off-site movement of dust from treated seeds during planting by planning for wind speed and direction.
- Always use high quality seed, free from excessive dust.
- For seed types that require that pesticides be coated onto the seed, use an appropriate coating system that keeps abrasion of the pesticide coating to a minimum.



- Avoid releasing dust from seed treatments into the air. When opening seed containers and during filling, emptying, or cleaning of the planting equipment, avoid dust exposure

ii) Pollinators

- Consider the presence of managed honeybee hives and flowering crops or weeds in or adjacent to the field which could attract pollinators.
- Consider the presence of flowering crops in or adjacent to the field which could attract pollinators.
- Take appropriate precautions to avoid contaminating them with dust from planting of treated seed.

iii) Aquatic Life

- Consider the presence of water bodies in or adjacent to the field which could be the habitat of aquatic life sensitive to pesticides.
- Take appropriate precautions to avoid contaminating them with dust or run-off.

iv) Waterways

- Do not contaminate water bodies when disposing of planting equipment wash water.

v) Spills of treated seed

- If spills occur, treated seed should be collected and disposed of properly to prevent exposure to humans or the environment.
- Follow directions on treated seed label and/or seed tag.

vi) Planting depths

- Follow planting depth instructions, if found on the seed tag, to protect birds, mammals and the environment.
- Cover all treated seeds in the field by incorporating into the soil at proper planting depth, in particular at row ends and field corners.

⁵ <https://cleanfarms.ca/>

VIII. Commercial Application of Seed Applied Technology (SAT)



Summary: Commercial Application of SAT can include fungicides, insecticides, nematicides, plant health products, inoculants, micronutrients, herbicide safeners, plant growth regulators and other biologically functional materials to commercial seed. SATs may include other materials such as colorants, polymers, drying agents, water and other additives (e.g. coating materials) to provide suitable appearance, physical properties, process performance, and other factors. The quality of the treatment is dependent on the composition of the applied material (the “treating mixture”), the application rate to the seed, the process conditions (seed throughput, seed temperature, product temperature, etc.), treatment procedures, and the application equipment. These quality factors must be selected, defined and monitored to ensure a safe, effective and high-quality treated seed, with properties that help ensure environmental stewardship. The quality of the seed prior to treatment (e.g., chipped seed, negligible dust) is also very important for ensuring the quality of seed treatment.

Note: Not all standards may apply to all processes, and some may apply only in a very limited way such as label verification or visual inspection.

A. Factors Affecting Product Integrity and Product Control

- i) Use of suitable SAT treating mixtures.
- ii) Use of appropriate equipment in good operating condition.
- iii) Use of suitable and consistent processes.
- iv) Proper mixing of components.
- v) Application at correct rates.
- vi) Use of correct materials.
- vii) Use of high-quality seed.
- viii) Purity of slurry mixture or components; e.g., avoiding contamination from previously used treating mixtures.
- ix) Use of unexpired components (if applicable) or treating mixture.
- x) Operation of treating processes within acceptable ranges; e.g., application to seed that is at the correct temperature as indicated by the process and/or treating mixture.

B. Determine Control Points

- i) Receipt of seed from third party or output from seed cleaning process.
- ii) Receipt of slurry components.
- iii) Preparation of treating mixture.
- iv) Application Process
(calibration and monitoring of application rate).
- v) Output from seed treating process.
- vi) Packaging.

C. Establish Application Processes

- i) Read, understand and follow all directions on labels and Safety Data Sheets (MSDSs) for all components of the treating mixtures.
- ii) Establish and use documented training procedures for seed treater employees, including mixer/loaders, seed treatment equipment operators, packagers, and fork lift operators.
- iii) Include personal protective equipment and hazardous material handling, as specified on labels or SDSs, where appropriate.
- iv) Establish understanding and/or agreements with third-party providers of seed on standards for material to be used in treating process, including needed data.
- v) Treater: provide appropriate seed tag contents as per the seed treatment product label requirements and the Federal Seed Act.
- vi) Test seed material using appropriate methodology to establish or confirm quality of seed used in treating processes.
- vii) Establish appropriate protocols for assessment of process inputs (seed, formulated products which include active ingredients, coating materials, etc.).
- viii) Establish and use documented slurry preparation procedures (including composition, sequence of addition, operator and preparation date).
- ix) Establish and follow changeover procedures when switching from one slurry to another.
- x) Establish and use documented procedures for handling, control, and proper disposal of leftover and unused slurry components, packaging materials, wastes, and treated seed.
- xi) Properly calibrate equipment and be sure to adjust equipment settings for lot changes, such as when applying products on a mg ai/seed basis.
- xii) Establish and follow treater cleanup procedure.

D. Establish Monitoring Procedures

- i) Treating Process Verification: Verify equipment is capable of accurately and uniformly applying the chosen product to seed, with acceptable physical properties of the treated seed including, but not limited to, acceptable process performance (e.g. lack of treatment build-up, etc.), treated seed dust levels, handling properties and plantability.
- ii) Upon receipt of materials, confirm by documentation or verify using diagnostic methods (where appropriate) that material meets specifications.
- iii) Verify application rate (options include calibration verification, mass balance of applied material and seed throughput, and analysis of treated seed).
- iv) Periodically monitor physical properties (e.g. tackiness, visible dust off, flow) and appearance (e.g. uniformity, color) of treated seed during the treatment process.



- v) Re-verify treating process if key parameters change and on a periodic basis:
 - Slurry composition;
 - Material suppliers;
 - Treating process parameters such as throughput; and
 - Treating application equipment.
- vi) Verify shelf life of components where applicable and use only within approved use period.
- vii) Verify shelf life of slurries where applicable and use only within approved use period.

E. Establish Verification Procedures

- i) Confirm and establish appropriate sign-off and administrative approval of verification procedures.
- ii) Verify procedure for quality of treated seed.
- iii) Verify procedures for periodic auditing and assessments through a checklist and inspection.
- iv) Verify adequate feed-back to the supplier of the material.

F. Establish Corrective Measures

- i) If seed or slurry components do not meet specifications, review use and disposition of the material.
- ii) If sourced material does not meet established standard, review procurement practices with supplier.
- iii) If treated seed does not meet application rate or required physical property specifications, review use and disposition of the treated seed.
- iv) Review application equipment maintenance and calibration.

G. Establish Record Keeping and Documentation Procedures

- i) Establish that the information accompanying receipt of the treatment components (e.g., shipping documentation, lot numbers, SDSs for treatment components) is accessible, secure and retained, internally and/or externally, as provided by third party.
- ii) Maintain SDS documents for hazardous components.
- iii) Keep records of training certifications, permits and administrative approvals.
- iv) Establish documentation requirements and retention policy for equipment calibration, treating records, seed treatment application rate analysis reports, and related documents.
- v) Maintain records of equipment maintenance and calibration.



IX. Preventing Contamination of Commercial Grain



Summary: Improper clean out of equipment used to handle bulk treated seed can lead to the contamination of commercial grain and oilseed deliveries, putting domestic and export grain and oilseed markets at risk. Those who deliver treated seed as part of commercial grain and oilseed deliveries are liable for all of the costs and losses by sector⁶. To meet the requirements for condition of grain at delivery⁷ the following are best management practices to help to prevent contamination of grain and oilseed shipments.



A. Equipment Selection

Ideally separate equipment should be dedicated to handling of treated seed and not used for commercial deliveries of grain and oilseeds.

Where separate equipment is not possible, wagons and trucks used for handling bulk seed should be selected for how easily and thoroughly they can be cleaned. Equipment should have straight sides and bottoms with no racks or pinch points, and very few angles or cross braces.

B. Bulk Seed Loading

All equipment used to handle treated seed should be identified with a tag or label after use for treated seed. The tag or label should not be removed until the equipment has been properly cleaned out and inspected. Tags may be available from the manufacturer of the seed treatment.

C. Equipment Clean-Out

A clean-out procedure should be developed and staff should be trained on the procedure. It should include directions to:

- i) Thoroughly sweep and or vacuum all surfaces and check all accessible areas for treated seed
- ii) Disassemble all racks and tarps to locate any trapped seed
- iii) In a location away from pollinators or pollinator habitat or forage, use compressed air to blow out tubing pipes or angle irons on equipment.
- iv) After cleaning, pressure wash all surfaces and inspect when dry.
- v) Clean up and appropriately discard all treated seed, wash water and residues.
- vi) If augers are used for both seed and grain and oilseed handling, they should be triple flushed immediately following planting with a quantity of untreated seed sufficient to fill the auger. The seed used as flush material should be planted.

D. Documentation

Keep accurate records identifying the equipment used to handle treated seed, and when it was cleaned. Documents should also state how clean-out was performed, and when equipment was inspected and by whom.

E. Third Party Conveyances

It is the responsibility of the shipper to ensure that third party conveyances are free of contamination. It is suggested that the operator be required to supply a document listing the last three products carried and identifying the clean-out procedures.

⁶ https://www.oaba.on.ca/newsFiles/1294411357--treated_seed_checklist_final.pdf

⁷ <https://grainscanada.gc.ca/en/protection/delivery/requirements-for-condition.html>

X. Grower Pesticide Application / Provincial Courses / Access Points to Provincial Training



Pesticide regulation is a somewhat shared activity between the Federal Government (Health) and the Provinces. The federal government assesses and approves products for sale, but the provinces can set regulations on those approved products for transportation, sale, use, storage and disposal.

The Pest Management Regulatory Agency (PMRA) of Health Canada uses a general statement on most treated seed labels: "For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency."

A search of provincial regulations finds that the amount of regulation is widely variable between provinces. Some provinces

(e.g. Alberta) clearly spell out how treated seed should be managed including disposal. Many appear to have no regulations or requirements at all.

Each province has its own pesticide training and certification program (see Appendix 2), but they are all based on the Standard for Pesticide Education, Training and Certification in Canada⁸.

⁸ <https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/public/federal-provincial-territorial/education-training-certification.html#stand>



XI. Glossary of Terms



Active Ingredient: (from the Pest Control Products Act) “Active ingredient” means a component of a pest control product to which the intended effects of the product are attributed and includes a synergist but does not include a solvent, diluent, emulsifier or other component that is not primarily responsible for those effects.

Colorants: Products whose primary function is to impart coloration to seed treatments and in turn color to treated seed. Treated seed is colorized or otherwise adulterated in appearance to allow visual identification that it is treated so as to identify it as unfit for human consumption and to identify the possibility of other hazards associated with treated seed.

Commercial Application: The application of seed treatments to seed in commercial facilities (as opposed to application on-farm and in planters).

Drift: The physical movement of pesticide droplets or particles through the air from the target site to any non-target site (which could result in Off Target Exposure).

Dust – field: This refers to dust generated from the soil. Such dust may be picked up and dispersed in the air by the planting equipment during the planting process.

Dust – treated seed: Fine particulate matter contained in or easily dislodged from treated seed. It consists of both the naturally occurring Untreated Seed Dust as well as components of the Seed Treatment.

Dust drift: See Drift. Specifically, dust drift is drift of dusts such as Treated Seed Dust and Lubricant Dust.

Emergency Preparedness Plan: A documented, trained and implemented plan for actions to be taken in the event of anticipatable emergencies. Examples of emergencies include tornadoes, earthquakes and chemical spills.

Environment: (as defined by the Government of Canada) means components of the Earth and includes

- air, land and water,
- all layers of the atmosphere,
- all organic and inorganic matter and living organisms, and
- the interacting natural systems that include components referred to in paragraphs (a) to (c);

Exposure – Occupational: The physiological exposure of people working with seed treatments through contact with the Seed Treatment Products or Treated Seed. Skin contact and inhalation of dusts or mists are typically the most significant routes of exposure.

Flowability: See Seed Flow. The lack of resistance to flow for seed and treated seed through a system: generally through a seed conditioning or treating plant; or through a planter.

Fungicide: A specific type of pesticide that controls fungal disease by specifically inhibiting or killing the fungus causing the disease.

Handlers: “Handlers” can refer to Handlers of Seed Treatment Products” (e.g. loaders, mixers or Seed Treating Operators) or “Handlers of Treated Seed” (e.g. Baggers, sewers, stackers, planter operators). Personal protective equipment may be specified for individual or groups of “handlers”.

Handling: Handling includes the movement of products and treated seed, including but not limited to loading, unloading, weighing, bagging, sewing, stacking, and planter loading and operation.

Hazardous components: Components which present health, safety or environmental hazards.

Headland: A strip of land left unplowed at the end of a field.

Inoculant: Agricultural amendments that use beneficial endophytes (microbes) to promote plant health. Many of the microbes involved form symbiotic relationships with the target crops where both parties benefit.

Inoculation: The process of adding effective bacteria to the host plant seed before planting.

Label: (from the Seeds Act) includes any legend, word, mark, symbol or design applied or attached to, included in, belonging to or accompanying any seed or package

Lubricant: A material added to seed to aid in Seed Flow in a planter. Such products are added when the seed is loaded into the planter, or may be metered in during planting. Lubricants include powders, with talc and graphite being the most common. Other lubricants for use with certain crops and planting equipment to reduce the generation of seed dust during planting are available or are under development.

Manufacturer: The producers of products for application as Seed Applied Technologies and of equipment.

Overtreatment: Is the application of Seed Applied Technology to previously treated seed.

Safety Data Sheets (SDS): A detailed informational document prepared by the manufacturer or importer of a hazardous

chemical. It describes the physical and chemical properties of the product, and is a tool for communicating safe handling and environmental protection requirements.

Personal Protective Equipment (PPE): Equipment that is worn by employees to mitigate hazards of a process. For seed treating operations, PPE typically means to reduce exposure of operators to seed treatments and treated seed dust. Such PPE includes but is not limited to long-sleeved shirts; long pants; shoes; socks; goggles; chemical resistant gloves; and respirators.

Pesticide: Health Canada's Pest Management Regulatory Agency defines a pesticide as follows: Any product, device, organism, substance or thing that is manufactured, represented, sold or used as a means for directly or indirectly controlling, preventing, destroying, mitigating, attracting or repelling any pest.

Planter Equipment: Equipment used to plant seed, of which there are many types. Examples include Box drills, mechanical meter planters, air seeders, and positive air pressure planters (with and without central commodity systems).

Pollinators: Organisms that carry pollen from one seed plant to another, which aids the plants in their reproduction. Common pollinators include insects, especially bees, some butterflies and birds.

Rhizobia: - Soil bacteria that fix nitrogen after becoming established inside root nodules of legumes. Rhizobia require a plant host; they cannot independently fix nitrogen.
Seed Applied Technology: All materials applied to seed including any combination of Seed Treatment Products, Seed Treatment Polymers, Seed Treatment Colorants, inoculants, micronutrients, biologicals and other Seed Treatment Components.

Seeds Act and Regulations: Federal Legislation and associated regulations, administered by the Canadian Food Inspection Agency, that prescribe requirements to ensure that seeds sold in and imported into Canada meet established standards for quality, and are labelled in order to be properly represented in the marketplace.

Seed Flow: The uniformity and freedom of flow of seed through a system, generally through a seed conditioning or treating plant; or through a planter. Poor seed flow may be slow or inconsistent seed flow, or plugging of augers or conveyors or other handling equipment. Seed treatments may positively or negatively impact seed flow.

Seed Flow Lubricant: A material added to seed to aid in Seed Flow in a planter. Such products are added when the seed is loaded into the planter, or may be metered in during planting. Lubricants include powders, with talc and graphite being the most common. Other lubricants for use with certain crops and planting equipment to reduce the generation of seed dust during planting are available or are under development.

Seed Polymer: A finishing coating applied to treated seed to protect active ingredients and biologicals applied in the form of seed treatments from dusting off. This not only improves retention of seed treatment active ingredients on the seed but also reduces the seed applicator's or grower's exposure to various compounds.

Seed Treatment: Seed treatment is the application of biological organisms and chemical ingredients to seed to suppress, control, or repel plant pathogens, insects, or other pests that attack seeds, seedlings or plants. Seed applied technologies such as inoculants, herbicide safeners, micronutrients, plant growth regulators, seed coatings, colorants, etc. may also be applied to the seed. Treated seed is intended for planting only and not for food or feed uses.

Polymers: Products added to seed treatments whose primary function is to reduce dust of treated seed and to improve retention of seed treatment active ingredients on the seed

Transport: The movement of products or treated seed from one location to another in the commercial chain normally by trucks, boat or rail. It also includes movement of product within a plant or on a farm, such as by augering, conveying, or elevating through elevators.

Treated seed: Seed that has been treated with a "Seed Treatment Product".

Wastewater: Any water contaminated with Seed Treatment Products or other Seed Treatment Components, such as from washing equipment.

Waterways: Any pathway of water that is constantly moving.

XII. Resources



Accredited Seed Treatment Operation Standards

<https://awsa.ca/accredited-seed-treatment-operation-standards/seed-treatment-resources/>

A Guide to the Government of Canada's Labour Program

<https://www.canada.ca/en/employment-social-development/corporate/portfolio/labour.html>

Employer and Employee Duties under the Canada Labour Code Part II

<https://www.canada.ca/en/employment-social-development/services/health-safety/reports/summary.html>

Health Canada Directive D94-06 - Colour Standards for Seed Treatment Products and Labelling of Treated Seed

<https://www.canada.ca/en/health-canada/services/consumer-product-safety/reports-publications/pesticides-pest-management/policies-guidelines/regulatory-directive/1994/colour-standards-seed-treatment-products-labelling-treated-seed-dir94-06.html>

Labour Program Hazard Prevention Guide

<https://www.canada.ca/en/employment-social-development/services/health-safety/reports/hazard-prevention.html>

National Building Code of Canada

<https://nrc.canada.ca/en/certifications-evaluations-standards/codes-canada/codes-canada-publications/national-building-code-canada-2015>

National Fire Code of Canada

<https://nrc.canada.ca/en/certifications-evaluations-standards/codes-canada/codes-canada-publications/national-fire-code-canada-2015>

Pest Control Products Act

<https://laws-lois.justice.gc.ca/eng/acts/P-9.01/page-1.html#h-2>
Provincial Environmental Protection Acts See Appendix 2

Seeds Act

<https://laws-lois.justice.gc.ca/eng/acts/S-8/page-1.html#h-2>

Summary of the Canada Labour Code Part II

<https://www.canada.ca/en/employment-social-development/services/health-safety/reports/summary.html>

The Employer and the Workplace Hazardous Materials Information System (WHMIS)

https://www.ccohs.ca/oshanswers/chemicals/whmis_ghs/program.html

The Guide to Seed Treatment Stewardship: American Seed Trade Association

<https://seed-treatment-guide.com/resources/for-farmers/>

Appendix 1

Signal Words And Precautionary Symbols

For use on labels of seed treated with a Pest Control Product. By April 23rd, 2020, treated seed must be labelled in both English and French.

Signal Word	Precautionary Symbol
Flammable/Inflammable	
Explosive/Explosif	
Poison	
Corrosive/Corrosif	



Appendix 2



Provincial Regulations for handling, storage and disposal of treated seed

Province	Act or Regulation	Text
British Columbia	Code of Practice for Agricultural Environmental Management http://www.bclaws.ca/civix/document/id/complete/statreg/8_2019 Pesticide Certification and Training Program https://www2.gov.bc.ca/gov/content/environment/pesticides-pest-management/pesticide-use/pesticide-certification	Agricultural products such as livestock, poultry, farmed game, fur bearing animals, animal and poultry feeds, forage silage, forage crops, vegetables and chemical fertilizers must be managed, used and stored in a manner that prevents the escape of agricultural waste that causes pollution.
Alberta	Environmental Protection And Enhancement Act: Waste Control Regulation http://www.qp.alberta.ca/1266.cfm?page=1996_192.cfm&leg_type=Regs&isbncln=9780779790579 Applicator Certification Program https://www.alberta.ca/using-pesticides-applicator-certification-program.aspx	Excess seed can be double-planted around field edges. Treated seed can also be planted on land designated for pasture or silage. It should be thoroughly incorporated at the time of seeding using a cultivation method such as harrowing Treated seed can be landfilled at a Class I or II landfill if it is non-hazardous waste according to the Alberta Waste Control Regulation (AR 192/96). Seed that is hazardous waste may be landfilled only at a Class I landfill (special landfill approved to receive solid hazardous waste). Seed that has been treated with fungicides only is classified non-hazardous in Alberta. Contact the landfill owner prior to delivering the seed to ensure that it will be accepted. If treated seed will be accepted, the landfill operator must be alerted at the time of disposal to ensure that treated seed is covered immediately to prevent any risk to wildlife. In the event the landfill operator is not willing to accept the waste, they should contact a broker at the Environmental Services Association of Alberta
Saskatchewan	Detailed product sheets are available in the Saskatchewan Guide to Crop Protection which is updated annually https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/crop-guides-and-publications/guide-to-crop-protection The guide contains detailed product sheets for seed treatments. There are restrictions and requirements for treated seed at the end of many of the product sheets. Saskatchewan Pesticide Applicator License https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/pesticide-licensing-program/pesticide-applicator-licence/pesticide-applicator-licensing-requirements	Any spilled or exposed seeds must be incorporated into the soil or otherwise cleaned up. Left over treated seed should be double sown around headlands or buried away from water sources
Manitoba	Detailed product sheets are available in the Manitoba Guide to Field Crop Protection which is updated annually https://www.gov.mb.ca/agriculture/crops/guides-and-publications/pubs/full-2019-guide-crop-protection.pdf The guide contains detailed product sheets for seed treatments. There are restrictions and requirements for treated seed at the end of many of the product sheets. Manitoba Pesticide Applicator License https://www.gov.mb.ca/agriculture/permits-and-licences/pesticide-and-manure/pesticide-applicator-licence.html	
Ontario	There are regulations for the use and sale of neonicotinoid-treated seed: https://www.ontario.ca/page/neonicotinoid-regulations Pesticide Licences and Permits https://www.ontario.ca/page/pesticide-licences-and-permits#section-3	
Quebec	Permits and Certifications for Sale and Use of Pesticides http://www.environnement.gouv.qc.ca/pesticides/permis-en/	
New Brunswick Nova Scotia Prince Edward Island Newfoundland and Labrador	The four Atlantic Provinces cooperate in projects to train and license pesticide applicators. https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Land-Waste-TerreDechets/Manuals-Manuels/ApplicatorCoreTrainingManual.pdf Each province has its own legislation. Prince Edward Island has their own Pesticide Applicator Certificate: https://www.princeedwardisland.ca/en/information/communities-land-and-environment/pesticide-applicator-certificate	



Canadian Seed Growers Association

The Canadian Seed Growers' Association (CSGA) is legally designated as the national standards and certification organization to assure seed crop varietal integrity for the seed certification system in Canada. Since 1904, this non-profit organization, with 3,500 members in nine provinces, seven Branches, and five time zones across Canada, has managed varietal certification of the crops that provide the pedigreed seed for commercial crop production. Working closely with value chain partners within the official seed certification system administered by the Canadian Food Inspection Agency (CFIA), CSGA annually certifies seed crops of more than 2,300 varieties of more than 50 crop kinds on more than 1.3 million acres, one of the largest, most diverse national acreages of certified seed in the world. This ensures a reliable supply of high-quality seed with assured genetic identity for both Canadian and export markets. www.seedgrowers.ca



Canadian Seed Trade Association
L'Association canadienne du commerce des semences

Canadian Seed Trade Association

Since 1923 the Canadian Seed Trade Association (CSTA) has represented the interests of Canada's thriving seed trade, working with partners to assure safety, reliability, access to markets and a regulatory environment that serves the interests of all Canadians. CSTA a member-driven organization of over 130 member companies and associations engaged in seed research, production, marketing and trade, both domestically and internationally. Our members are proud to be vital contributors to our nation's economy and the health and well-being of all Canadians. CSTA is a not-for-profit, non-partisan trade association and national voice for the Canadian industry. Our mission is simple: to foster seed industry innovation and trade. CSTA's membership is diverse, working in over 50 crop kinds, including grains and oilseeds, special crops, forage and turf grasses, flowers, vegetables and fruits. Our member companies cover all sizes, from small operations to large international companies. We assure the diversity of our membership is represented in our operations by adhering to a critical democratic principle: one member, one vote. This means that every CSTA member has a place at the table and a voice in setting the course for the industry. CSTA is governed by a 16 member board of directors, supported by dedicated staff based in Ottawa, and sustained by the energy and effort of member volunteers who devote their time and talents helping CSTA achieve its mission on behalf of the seed industry and all producers

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