Integrated Pest Management & Fumigation Services

Regional Companies
Nationwide Service
Global Network
FPA is an organization of Regional companies formally organized to provide National capabilities of:

- Fumigation and Alternatives
- Food Safety Pest Management
- Training and Education
Coverage in North America
Grain Protectants – an Alternative to Fumigation?
What is a grain protectant?

It is a residual insecticide designed to be applied to grain (a human food source) to protect against insect infestation.

• They can be found in liquid or dust form.

• Protectants do not eliminate insect infestation.

• Insect resistance can quickly cause this product to become irrelevant. Through misuse.
What is a grain protectant?

Grain Protectants are federally registered pesticides governed by the US-EPA.
• They pesticide label is the law!
• Misuse of the pesticide label is a violation of state and federal law.
• Most insurance companies will not pay off in claims resulting in illegal activity.
Question? Are grain protectants an alternative to fumigants?

Answer: NO! Grain protectants all have labeled dependence on fumigants.

- Fumigants disinfect grain
- Protectants prevent infestation or re-infestation for a period of time.
Advantages of Protectants:

– Residual security for long term storage.
– Treats entire grain transfer system.
Grain protectants date back to Malathion and the 1970’s.

Since then we have had others:

- Actellic
- Reldan
- Diacon
- Storicide II
- Insecto
Today we have a growing number of choices:

– Actellic
– Diacon
– Storicide II
– Protect-It
– Centynal
– Sensat
• Safety Requirements:

<table>
<thead>
<tr>
<th>FIRST AID</th>
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| IF IN EYES: | • Hold eye open and rinse slowly and gently with water for 15-20 minutes.  
• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.  
• Call a poison control center or doctor for treatment advice. |
| IF SWALLOWED: | • Immediately call a poison control center or doctor.  
• Do not induce vomiting unless told to do so by a poison control center or doctor.  
• Do not give any liquid to the person.  
• Do not give anything by mouth to an unconscious person. |
| IF ON SKIN OR CLOTHING: | • Take off contaminated clothing.  
• Rinse skin immediately with plenty of water for 15-20 minutes.  
• Call a poison control center or doctor for treatment advice. |

**NOTE TO PHYSICIAN:** Contains petroleum distillate – vomiting may cause aspiration pneumonia. Chlorpyrifos-methyl is a cholinesterase inhibitor. Treat symptomatically. Atropine by injection is the preferable antidote. Oximes such as 2-PAM may or may not be therapeutic, but it is recommended they not be used in place of atropine.
• Safety Requirements:

PRECAUTIONARY STATEMENTS

DANGER PELIGRO
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
Corrosive. Causes irreversible eye damage. Causes skin irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Harmful if inhaled. Do not get in eyes, on skin or on clothing. Wear goggles or face shield and impervious gloves when handling. Do not breathe vapors and spray mist. Keep container closed. Wash hands, arms and face thoroughly with soap and water after handling and before eating or smoking. Routinely shower or bathe after work and wash all clothing with soap and hot water before reusing. Keep away from food, feedstuffs and water supplies.

PERSONAL PROTECTIVE EQUIPMENT (PPE)
Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category F on an EPA chemical resistance category selection chart.

Mixers, Loaders, Applicators and other handlers must wear: Long-sleeved shirt and long pants, chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber, or Viton and protective eye equipment. In addition, applicators applying to empty grain bins must wear: A NIOSH-approved respirator with any N, R, P, or HE filter. See Engineering Controls (continued)
Safety Requirements:

ENVIRONMENTAL HAZARDS
STORCIDE II insecticide is extremely toxic to fish and toxic to birds and other wildlife. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not discharge directly or indirectly into surface waters. Do not contaminate water by cleaning of equipment or disposal of wastes.

Exposed treated seeds are hazardous to birds and other wildlife. Dispose of all excess treated seeds and seed packaging by burial away from bodies of water.

This pesticide is highly toxic to bees exposed to direct treatment or residues on crops or weeds. Do not apply STORCIDE II insecticide or allow it to drift onto crops or weeds on which bees are actively foraging.
• Toxicity and Safety:

<table>
<thead>
<tr>
<th>Product</th>
<th>Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reldan</td>
<td>Chlorpyrifos-methyl</td>
</tr>
<tr>
<td>Diacon</td>
<td>Methoprene</td>
</tr>
<tr>
<td>Storicide</td>
<td>Chlorpyrifos-methyl and Deltamethrin</td>
</tr>
<tr>
<td>Protect-It</td>
<td>Synergized DE</td>
</tr>
<tr>
<td>Centynal</td>
<td>Deltamethrin</td>
</tr>
<tr>
<td>Sensat</td>
<td>Spinosad</td>
</tr>
</tbody>
</table>
• Toxicity and Safety:
• Deltamethrin
  – Skin Sensitivity – Hot or Burning Sensation.
    • From “misting” during application.
    • Fugitive Dust

Note: Vitamin E cream will help. Applying prior to possible exposure works best.
• Safety Requirements:
  – Coveralls over long sleeve shirt and long pants.
  – Chemical resistant work boots plus socks.
  – Chemical resistant gloves
  – Protective eye wear.
  – Chemical resistant apron.
• Safety Requirements: Licensing?
  – Not required on the label.
  – States can supersede the label.

Note: Grain Protectants if applied at over dose rates could result in adulteration of grain. This is a serious concern that must be considered.

We offer training and re-training to all our customers purchasing grain protectants from us.
Is Tempo a Grain Protectant?

NO!
## Grain Protectants

<table>
<thead>
<tr>
<th>Commodities</th>
<th>Water</th>
<th>Oil</th>
<th>Pest For</th>
<th>Pest Not Listed</th>
<th>Low Dose</th>
<th>Hi Dose</th>
<th>Retail Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actellic Shelled Corn (field and popcorn), Grain Sorghum</td>
<td>yes</td>
<td>yes</td>
<td>CB, FB, FlatB, GW, HFB, MW, MB, RW, STGB, AM, AGM, IMM</td>
<td>LGB, Posid, Mites</td>
<td>9.2 oz to 12.3 oz</td>
<td>More than $0.07 / B</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Always read the label. Only a small amount of labeled information appears on this chart. Chart is for general discussion only.
• When choosing a grain protectant it is important to consider that all grain protectant labels suggest that if an active infestation exists – you should fumigate before applying the grain protectant.
Application Equipment
- Small Tank Mix System – < 50 Gallons
- Large Tank Mix System – > 50 Gallons
- Injection System – Separated
The Key to Proper Application

- Paring chemical release rate with an accurate rate of grain flow.
- Chemical flow can be finely determined.
- Grain flow rates are a good estimation. The more accurate the estimation the more effective the application. Guess wrong too many times and resistance becomes a concern.
AGAIN – Accurate Application is Critical to Success!

The equation is simple:

1,000 bushel + 5 gl of mix* = desired ppm and protection.

+ Sample and test to confirm delivery!

& Monitor temperatures and insect activity!
Testing for Accuracy

- We have the capability to analyze the treated grain samples for proper PPM.
- All application rates correlate to a specific residual concentration.
## Cost Analysis

<table>
<thead>
<tr>
<th></th>
<th>Y1</th>
<th>Y2</th>
<th>Y3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fumigation</td>
<td>$0.025</td>
<td>$0.025 \times 2 = $0.05</td>
<td>$0.025 \times 2 = $0.05</td>
<td>$0.125</td>
</tr>
<tr>
<td>Protectant</td>
<td>$0.047</td>
<td>$?</td>
<td>$?</td>
<td>$0.047</td>
</tr>
<tr>
<td>Both</td>
<td>$0.047</td>
<td>$?</td>
<td>$0.025</td>
<td>$0.072</td>
</tr>
<tr>
<td>Both Plus</td>
<td>$0.047</td>
<td>$0.025</td>
<td>$0.025</td>
<td>$0.097</td>
</tr>
<tr>
<td>Aggressive</td>
<td>$0.047</td>
<td>$0.025</td>
<td>$0.05</td>
<td>$0.122</td>
</tr>
<tr>
<td>Integrated</td>
<td>$0.04</td>
<td>$0.025</td>
<td>$0.05</td>
<td>$0.115</td>
</tr>
</tbody>
</table>

*Note: $ per bushel*
Proper Use of Protectants:

– Top Dressing
– “Capping” - Top and Bottom Applications
– Choosing low levels to save money?
What will it take to maximize your risk return?
Good stored product management:
• Clean bins thoroughly.
• Spray empty bins with residual.
• Do not allow grain spillover.
• Exterior Sanitation and Residual Treatment.
• Monitor temperatures and insects continuously.
• Use traps and sample for insects.
Summary:

We now have the largest selection of protectant products to choose from. It is important not to make selections on price alone. Products with protection against the insect infestations that you have had a history of maybe the most important.

With the selection of protectants, fumigants, monitoring tools and the knowledge of stored grain insects – this arms the grain industry with more tools to fight with than ever before.

Craig Jacobs, Alliance Pest Solutions
We are a full line distributor for grain protectants and application equipment:

- Diacon
- Storicide II
- Centynal
- Protect-It