

# Grain & Seed News

A Newsletter for the Grain & Seed Industry • Number 9

## Phosphine Machine



By **Nathan Stocker**  
Operations Manager

**"Yes, you can fumigate grain with Phosphine without having to worry about flames, residual dust, or bin entry."**

The HDS system uses cylinderized Phosphine called VaporPhos™ and is blended with ambient air into a desired concentration. The Horn Diluphos System (HDS) was developed by Dr. Franciscus Horn in Chile in 1995 and he has perfected it into the form we have today. The gas mixture is injected into the grain mass, usually in bottom aeration ducts. The unit is compact, mobile, and user friendly. There are several models available for size of structure.

### Advantages:

One advantage of VaporPhos is the ability to introduce the fumigant in a few hours rather than a few days, like solid phosphine. Fumigation Service & Supply has been commercially fumigating grain with this system since 2001.

The HDS allows you to precisely dose a structure or commodity. If the gas loss dictates a need to add gas, simply add more. Because the structure is getting dosed with efficacious levels initially, there is reduced exposure time necessary. It is also ideal for commodities that have low tolerance/no tolerance for residual dust or need to be fumigated multiple times. In commodities such as popcorn and rice, it eliminates the need for disposal of



Grain fumigation with HDS.

spent fumigant. This system has given grain managers the ability to treat ground piles and bunkers, which were not always possible.

### Case Studies Using the HDS:



Nathan using the HDS 800 unit.

Phosphine has been the fumigant of choice in the United States for 60 years. This fumigant has been the standard treatment of bagged grain and seed. *(cont. on page 3)*

### In this Issue:

- Phosphine Disposal
- Case Studies
- Rice ID
- Grain Protectants



Fumigation Service & Supply, Inc.  
16950 Westfield Park Road  
Westfield, Indiana 46074-9374 USA  
[www.FumigationZone.com](http://www.FumigationZone.com)





# Phosphine Disposal

By John Mueller

Grain products shipped by rail are commonly fumigated. Often receivers of these railcars find solid Phosphine PrePacs™ or magnesium phosphide in them. When this happens, the goal is to get the phosphine material safely and properly disposed. **According to the label, the person receiving this railcar must be trained.**

The receiver must have Personal Protection Equipment (PPE) in order to handle the material safely.

## PPE recommended:

- Gloves
- Eye Protection
- Monitoring Device (Draeger Pac III or the New Pac 7000)
- Gas Mask with cartridge for .3ppm up to 15ppm or Self Contained Breathing Apparatus (SCBA) for above 15ppm

When disposing of pre-packaged phosphine it is important to carefully manage this spent material. **Phosphine is flammable when wet.** A fire could occur if the proper steps are not taken. We believe the “best practice” for safely managing this material is to follow these steps:



Phosphine PrePac dry de-activation system (drum) on the right and a wire disposal basket on the left.

**Step One:** Place the PrePacs in a wire basket and then in the dry, locked, secured deactivation system. Leave for seven days.

**Step Two:** Remove basket containing PrePacs from dry de-activation system and

place in drum of water mixed with 1/4 bottle of dishwashing soap. Use a cylinder block or a weight that can fully submerge a basket of pre-pacs for seven days.

**Always be careful when placing phosphine spent products in water.**

**Step Three:** The worst thing that could have happened to the PrePacs has—they got wet. But this wetting was managed and

soaking in water is just an extra precaution. Now you are disposing of a pesticide package and not a pesticide.

In most states this is not hazardous waste or special waste. Always double check your states regulations for conformity.

You can also view an instructional YouTube.com video for more on this important fumigation safety process.

**Note:** It is a good idea to let the local dumpster company and authorities know that you will be properly deactivating the waste before you insert it into the dumpster. They may want to know in case of an emergency. Just think, if a fire were to occur, phosphine is flammable when wet and fires are normally extinguished with water.



Phosphine PrePac not properly disposed of, burned.



# A Closer Look at the Rice Weevil

By Ryan A. Yutzy



Courtesy of Michigan State University

The Rice Weevil is approximately 1/6 of an inch long with a prolonged snout protruding out of its head. It is primarily a light brown color but has two orange or yellow colored patterns on each of its wing covers; both of which mirror one another. This characteristic is unlike the Maize Weevil and the Granary Weevil, which are sometimes confused with this species.

## Damage:

The Rice Weevil is able to fly and is attracted to light, making it dangerous to grain storage and processing facilities. Grain and seed of choice for the Rice Weevil include rice, corn, wheat, oats, barley, and rye but it will occasionally infest biscuits, waffles, white bread, and tobacco.

## Life Span:

A female Rice Weevil can live 4 to 6 months and is capable of depositing 400 eggs in her lifetime. The larvae hatch from the egg in about 3 days and feed inside the grain kernel for about 2.5 weeks. The larvae pupate inside the kernel and remain there until the adult exoskeleton hardens enough for them to safely exit the seed coat. A single generation of Rice Weevil can be completed in about 6–8 weeks time.



Courtesy of University of Georgia

## Ideal Conditions:

The Rice Weevil first becomes active at temperatures above 55°. Only a few weevils survive the winter temperatures of temperate zones. In warmer climates, these weevils fly to and lay their eggs on cereal crops. In fact, a large contributor to the spread of Rice Weevil is that of the cereal trading industry.

## Seed and Grain Case Studies Using the HDS: (cont. from pg. 1)

With the strengths of phosphine, come weaknesses. Two primary weaknesses are flammability and long treatment times. Recently FSS utilized a new phosphine based fumigant called Vaporph<sub>3</sub>os (VP) to solve three very difficult treatment needs. This involved treating bagged ingredient which was

infested with Saw-toothed grain beetle. The problem was isolated and treated within eight hours of discovery. Infested material was treated under tarp. Phosphine's penetration capabilities were what was needed and the treatment was successful. Treatment took only 48 total hours and the treated product was then moved to be

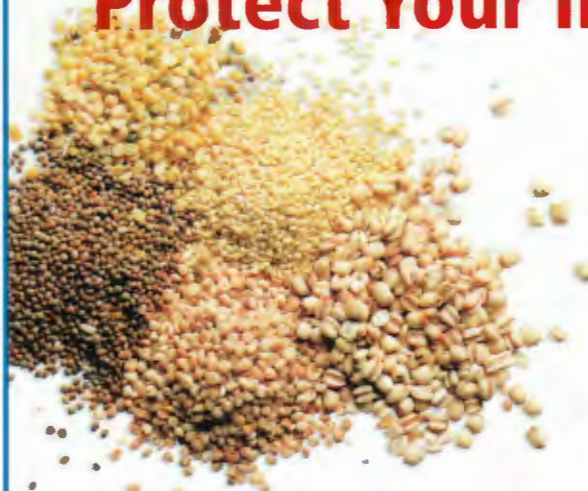
destroyed without risk of contamination of other goods. Another case was with bulk grain ground piles which could not be treated with traditional metal phosphide because of long treatment times and risk of flammability. VP and Horn Diluphos System (HDS) was used and 1.5 million bushels where shipped out

the following week, *Insect Free!* Another successful treatment. Since then, the site has treated three more cycles and is growing their business with additional grain stored on the ground due to their new found level of confidence in protecting this valuable commodity.



products • service • education • • • • •

## Protect Your Investments



- Custom Grain & Seed Fumigations
- Custom Grain & Seed Monitoring
- Phosphine Fumigants
- Safety Equipment
- Continued Education Classes



Fumigation Service & Supply, Inc. • 1-800-992-1991 • [www.FumigationZone.com](http://www.FumigationZone.com)

products • service • education • • • • •



Fumigation Service & Supply, Inc.  
16950 Westfield Park Road  
Westfield, Indiana 46074-9374 USA

[www.FumigationZone.com](http://www.FumigationZone.com)

Presort Standard  
U.S. Postage  
PAID  
Carmel, Indiana  
Permit #14

### Plan to attend the next Fumigation Re-certification Program

**August 4 • Bloomington, IL**  
Double Tree Hotel

**August 5 • DeKalb, IL**  
Northern Illinois University

**Call 1-800-992-1991 for details!**