



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety Administration**

East Building, PHH – 30
1200 New Jersey Avenue, Southeast
Washington, D.C. 20590

SPECIAL PERMIT AUTHORIZATION

DOT-SP 12325

EXPIRATION DATE: July 31, 2012

GRANTEE: Global Passive Safety System Ltd.
Springfield, PA

In response to your March 25, 2010 application for party status to DOT-SP 12325, Global Passive Safety System Ltd. is hereby granted party status to DOT-SP 12325 in accordance with 49 CFR § 107.107.

Copies of this special permit may be obtained by accessing the Office of Hazardous Materials Safety Homepage at http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm. The most recent revision of the special permit supersedes all previous revisions of the special permit. Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

If you have questions regarding this action please call the Office of Hazardous Materials Special Permits and Approvals at (202)366-4535.

Issued in Washington D.C. on **September 14, 2010**.

for Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety



Thursday, March 25, 2010

Associate Administrator for Hazardous Materials
Safety, Research and Special Programs Administration
US Department of Transportation
400 7th Street SW
Washington, DC 20590-0001
*Attn.: J. Suzanne Hedgepath DHM-1
Director, Office of Hazardous Materials,
Exemptions and Approvals*

Applicants Name: Global Passive Safety Systems Ltd.

Andy Abrams
761 West Sproul Road, Suite 208
Springfield, PA 19064
P-267-297-2340
M-267-307-0949
F- (267) 937-2081
E-Mail: AndyAbrams@GPSafetySystems.Com

49 CFR-107.105(b)- Confidential Information- No confidential treatment is requested.

49 CFR 107.105(C) – Description of Exemption Proposal

1. The specific regulations from which the applicant seeks relief are 49 CFR 106, 107 and 171-180- more specifically 174.67(i) and (j) which require:

- (i) Throughout the entire period of unloading and while a tank car has unloading equipment attached, the facility operator must assure that the tank car is:*
- (1) Attended by a designated hazmat employee who is physically present and who has an unobstructed view of the unloading operation; or*
 - (2) Monitored by a signaling system (e.g., video system, sensing equipment, or mechanical equipment) that is observed by a designated hazmat employee located either in the immediate area of the tank car or at a remote location within the facility, such as a control room. The signaling system must—*
- (i) Provide a level of surveillance equivalent to that provided in subparagraph (1) of this paragraph (i); and*

761 West Sproul Road, Unit 208
Springfield Pa, 19064
P-267-297-2340
F-267-937-2081

(ii) Provide immediate notification to a designated hazmat employee of any system malfunction or other emergency so that, if warranted, responsive actions may be initiated immediately.

(j) Attendance is not required when piping is attached to a top outlet of a tank car, equipped with a protective housing required under §179.100–12 of this subchapter, for discharge of lading under the following conditions:

(1) All valves are tightly closed.

(2) The piping is not connected to hose or other unloading equipment and is fitted with a cap or plug of appropriate material and construction.

(3) The piping extends no more than 15.24 centimeters (6 inches) from the outer edge of the protective housing.

All of these provisions point to a fundamental concern relating to the release of product, primarily through failed hoses in railcar applications and the need stop the flow of product from both the source and the receiver without human intervention caused by complete hose rupture or separation. Leaks are a significant concern but can be monitored routinely not requiring the enormous resources of attendance by the unloader even where the tank car is not unloading but merely sitting on line.

2. The specific mode of transportation is tank truck via road.

3. Description of proposed exemption:

- i. We are seeking an exemption for the use of the **LifeGuard Safety Hose®** technology designed to eliminate the potential for disaster through the use of an internal engineered compression spring and a patent pending Tri-Bolt Breakaway Coupling integrated into one system.
- ii. **It is categorically the safest hose assembly available** with an integrated breakaway coupling and an internal safety system using an **Engineered Compression Spring®**.
- iii. The system has a flapper valve on each end, one in a position that you are familiar with and the other on the outside of the breakaway flange. The breakaway as you can see from the pictures and drawings is a three-bolt flange with the bolts engineered to release after app. 1200 pounds of force is applied to them. To put this in perspective a regular hose assembly will not fail until 5,000 pounds plus is exerted upon the hose. This is typically far more than either the truck or stationary piping is designed to withstand. The flapper, as you can see will seal “behind “ the breakaway flange forming a seal on both sides. I think that it is also apparent by the pictures and the drawings that the breakaway flange is almost imperceptible, needs to be only on one-side of the hose and will not interfere in any way with operation. It is light-weight and streamlined. The bolts are engineered with existing and proven technology and are familiar to many in our industry as reliable. I have attached test documents showing the breakaway characteristics of the bolts.
- iv. The flappers are held in the open position by a compression spring. This spring (obviously of material compatible with the medium) is light weight and very durable, in fact there is no difference in weight between this new system and older competing products. The spring will be one piece from end- to-end and will have the spring part occupying about two feet in the middle of the hose. The spring will have on each side (again this is one piece) straight metal spring steel that will insert into the flapper

- holding it open. This basically looks like a two foot spring with about 9 feet of straight spring steel protruding from each side. The introduction of advanced spring technology has several important advantages:
- v. The amount of axial force (meaning the force exerted outward from the spring by the straight steel “arms”) is measurable to the pound unlike other products where this force is estimated.
 - vi. It allows for ease of assembly as each spring will be exactly the same and there will be little or no customization and therefore reliability of field operations.
 - vii. It allows for specialty assemblies to be easily made, ex: if a customer want a 2” x 20” hose with higher/lower pressures than a typical assembly a spring can be easily made to accommodate this request with its unusual operating pressure.



The exemption would provide that the attendance requirements set forth in the above regulations would not be required if the tank truck is using a hose assembly that has the capability to stop the flow of product from both the source and the receiver without human intervention within 1 second of an unintentional release caused by complete hose rupture or separation.

- 4. The exemption would be for ten years.
- 5. Our basis for seeking the aforesaid exemption is as follows:

The adoption of the aforesaid exemption will prevent the catastrophic human loss and property by hose rupture or separation during loading, unloading, transfer or use of hazardous liquids, hydraulic or pressurized gases in hose applications.

761 West Sproul Road, Unit 208
Springfield Pa, 19064
P-267-297-2340
F-267-937-2081

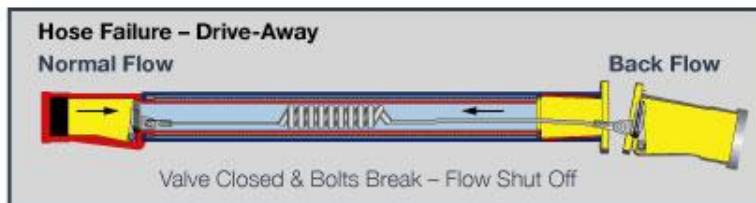
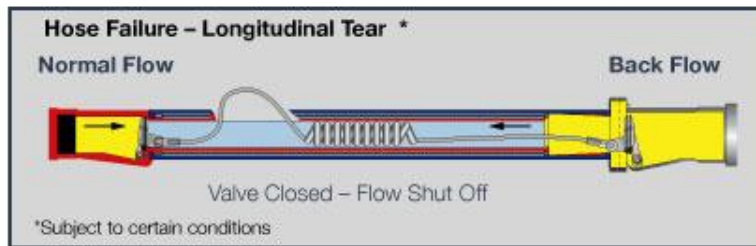
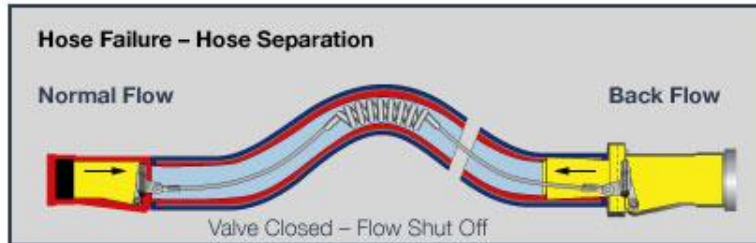
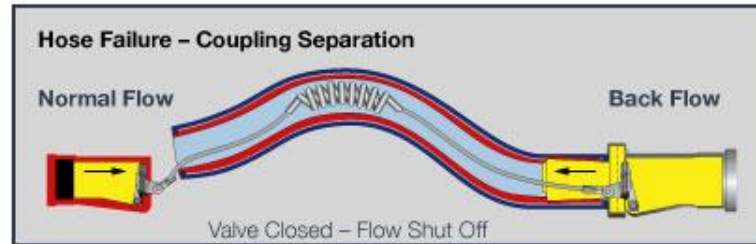
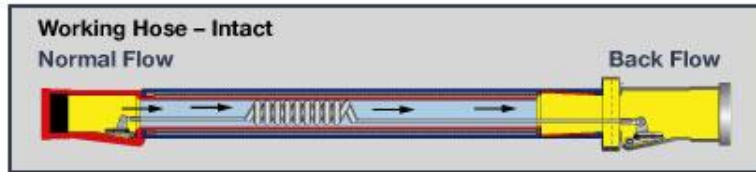
Conventional hoses, through fatigue, defects, use with corrosive material or abuse will fail unless they are taken out of service before they fatigue to the point of failure. The result of hose failure causes hazardous or flammable gas or liquids to be discharged causing harm to personnel or property. The discharge of a flammable, toxic or oxidizing gas adds an additional environmental or fire hazard.

To prevent such catastrophic incidents, the valve manufactures make safeguard devices such as an excess flow valves that are designed to stop the flow of product when abnormal surges of product flow occur. Unfortunately they do not always function and the public is left with virtually no protection from the potentially catastrophic results from hose severance, coupling ejection or separation caused by pullaway. The hose industry presently manufactures hose material and coupling based upon various standards, all seeking to avoid hose failure. The issue that is left completely unaddressed is “what happens if the hoses do fail?”

i. Status of Technology:

There are several available technologies that meet this standard. First there are valve configurations such as the chlorine industry utilizes with Pamphlet 57 that purportedly stop the flow of product in both directions for chlorine service. There is a technology known as “Smart-Hose” that eliminates the potential for these hazards by incorporating a patented design that includes an internal cable connected to normally unseated “valves” located on each end of the cable. If the hose should separate or stretch to the point of an unsafe condition, the unique design causes the valve plungers to instantaneously seat, thereby stopping the flow in both directions.

Our have completed testing, implementation and patent application filing of two **advancements** on the Smart-Hose technology that we previously invented. The patent pending new technology, known as the **LifeGuard Tri-Bolt Breakaway Hose®**, **combines a similar safety concept to the Smart-Hose technology that we invented but with (1) a more advanced internal compression spring system and (2) with a Breakaway design** but for the purposes of this e-mail I will concentrate on the technical. In sum, our former system, had **no controlled manner of separating** during a driveway scenario. The new system has addressed this issue.



ii. Cost Benefit Analysis

The LifeGuard Safety Hose Safety System adds a small amount to the hose's cost but prevents significant liability costs and insurance claims. We are not privy to the costs of other similar technologies, however the LifeGuard Safety Hose is extremely cost effective. We have attached several cost analysis of various sizes of hoses – all pointing to nominal, if any, additional cost.

761 West Sproul Road, Unit 208
Springfield Pa, 19064
P-267-297-2340
F-267-937-2081

iii. Conclusion:

For most of this century, engineers have worked at creating higher standards of safety. From the institution of check valves to bypass systems to excess flow valves, efforts have been advanced to enable highly dangerous piping systems to function in a safe manner. Now that similar safety features are available within hoses, they should be utilized to protect the consumer, the employee and the public at large and enable the user of tank trucks to be more productive while providing this higher degree of safety.

6. **LifeGuard Safety Hose does not seek emergency processing although expedient review would be appreciated as many tank truck users are awaiting this exemption to utilize this technology.**
7. **The hazardous materials considered under this exemption would be that all liquids and gases that would be transferred by tank truck. LifeGuard Safety Hose may or may not provide hose assemblies for all of the aforesaid applications but to the extent that LifeGuard Safety Hose LifeGuard Safety Hose's are available, we seek an exemption for these applications.**
8. **Not applicable**

9. **Alternative Packagings**

Not applicable

(d) Justification of Exemption Proposal

An exemption from compliance with this regulation would be more protective of human health and the environment than compliance with the regulation. Compliance with the regulation requires disconnecting hoses several times a day in many cases. Moreover, the attendance requirement places an unloader in harms way in the case of a hose failure. The use of LifeGuard Safety Hose technology will create a safer and more productive work environment.

1. Relevant Shipping and Incident Experience

Hoses in Use - During the past six years, over 300,000 hose assemblies representing over 1,000,000 feet of hose with the Safety System have been sold to the Industrial Gas Cylinder Filling Industry via our previous companies, Smart-Hose Technologies, Zena Associates and Woodland Cryogenics. This represents **over 63%** of all purchased assemblies during that period.

- **RSPA has already issued a similar exemption under DOT-SP 12325-N for Rail Car Unloading applications under 49 CFR 174.67 (i) (j) and DOT-SP 14447 specifically pertaining to this regulation. We have attached a copy of these exemptions and the related documentation.**

761 West Sproul Road, Unit 208
Springfield Pa, 19064
P-267-297-2340
F-267-937-2081

- HM-225 and 49 CFR 173.315 has created a “passive device” standard with design certifying engineer status that the LifeGuard Safety Hose technology satisfies.
- The aforesaid **Special Permit (12325-N) has already been issued** and the attendant information explains the thought process associated with this Special Permit. In sum, it is deemed far safer to enable personnel to be further away from the source of the hazardous material release so long as passive safety technology is in place. Moreover, a real-world analysis further recognized that it is likely personnel may not be in compliance of the regulations requiring attendance and this Special Permit would enhance safety.
- **Testing- LifeGuard Safety Hose** has passed rigorous tests performed by many industrial gas manufacturers and has hundreds of thousands of hoses in service throughout the industrial gas industry. I have enclosed copies of all of these test reports for your review. These results are quite comprehensive however we will certainly perform any other tests that you or your colleagues deem appropriate.

2. Risk to Safety That Will Result From Exemption

There is no increased risk to safety would occur. Moreover, a greater safety environment would exist since automatic safety products provide a greater degree of safety by obviating the risk of human error or human injury in the course of conduct.

3. Substantiation

LifeGuard Safety Hose has attached to this application for exemption the data from the testing of the LifeGuard Safety Hose. This test data proves that the LifeGuard Safety Hose establishes a level of safety that is at least equal to that required by the regulations. Indeed, the LifeGuard Safety Hose provides a level of safety that exceeds the present regulations.

Thank you for your consideration. Should you have any questions, please do not hesitate to contact me at (267)297-2340.

Sincerely,



Andrew C. Abrams

October 31, 2005



U.S. Department
of Transportation

400 Seventh Street, S.W.
Washington, D.C. 20590

**Pipeline and
Hazardous Materials
Safety Administration**

DOT-SP 12325
(SIXTH REVISION)

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: (See individual authorization letter)
2. PURPOSE AND LIMITATION:

This special permit authorizes tank cars, containing hazardous materials identified in paragraph 6, to remain standing with unloading connections attached, provided that a minimum level of monitoring, as specified in this special permit, is maintained and that specially designed hoses, capable of preventing a catastrophic uncontrolled release of product, are utilized. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.

3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 174.67(i) and (j), in that, with a minimum level of monitoring, a car may be allowed to stand with the unloading connections attached whether or not product is flowing out of the car; and that marking requirements of § 172.302(c) are waived.
5. BASIS: This special permit is based on the application of Air Liquide America, L.P. dated Jul 26, 2005, submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Hazardous materials as specified in § 172.101 Table authorized in railroad tank cars	As appropriate	As appropriate	As appropriate

7. SAFETY CONTROL MEASURES:

- a. PACKAGING - Packagings must be DOT or non-DOT specification tank cars authorized for the material specified and meeting all DOT specification requirements.
- b. Hoses used for the unloading operation must be: constructed by Smart Hose Technologies, Inc. (models: Lifeline 1, 2, or 3); equipped with cable connected wedges, plungers or flapper valves located at each end of the hose; and marked with the name of the manufacturer, the location (city and state) of the facility at which it is manufactured, and the date of manufacture.
- c. Each facility operator unloading tank cars must install a bi-directional derail in an effective location (at least 50 feet when possible) from the end of the equipment to be protected by the caution sign. The person performing the unloading operation must lock the device in the derailing position with an effective locking device operable only by a representative of the facility.
- d. Each facility operator must designate an employee or employees responsible for on-site monitoring of the transfer facility. The designated employee(s) must be made familiar with the nature and properties of the product contained in a tank car being unloaded on site, procedures to be followed in the event of an emergency, and, in the event of an emergency, have the ability and authority to take responsive actions. The transfer facility must be inspected by one of the designated employees at least hourly and a log must be maintained documenting the times and dates of inspection. If more than one employee is "designated," during each shift or

October 31, 2005

other period when the plant is operating and during any other time when a tank car containing a hazardous material is connected to the unloading facility, the special permit holder must notify which of the designated employees is responsible for on-site monitoring of the transfer facility.

e. When the car containing hazardous materials is connected to an unloading apparatus:

(i) If product is being transferred, the provisions of subparagraph d., above, must be followed.

(ii) If no product is being transferred from the tank, the tank car and facility shut off valves must be secured in the closed position;

(iii) The designated employee must be on site at the facility; and

(iv) The requirements of § 174.67(a)(2) and (3) apply.

f. Prior to each use, each hose must be inspected to ensure that it is of sound quality, without obvious defects detectable through visual observation.

g. Hoses must be tested in accordance with the written procedures, time-frames and acceptance criteria established and provided by the hose manufacturer and on file with the Office of Hazardous Materials Special Permits and Approvals.

h. The facility operator must establish and maintain liaison with fire, police and other appropriate public officials to learn the responsibilities and resources of each governmental agency that may be called upon to respond to an emergency involving a tank car and transfer facility and acquaint the officials with the facility's capabilities and procedures in the event of an emergency.

i. The marking requirements of § 172.302(c) are waived.

j. A current copy of this special permit must be maintained at each facility where this special permit is utilized. A current copy of this special permit must be made available to a DOT representative upon request.

8. MODES OF TRANSPORTATION AUTHORIZED: Rail freight.
9. MODAL REQUIREMENTS: None as a requirement of this special permit.
10. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
 - o All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
 - o Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
 - o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this special permit, including display of its number, when the special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)- 'The Hazardous Materials Safety and Security Reauthorization Act of 2005' (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term 'exemption' to 'special permit' and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

11. REPORTING REQUIREMENTS: Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 - Immediate notice of certain hazardous materials incidents, and 171.16 - Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit

October 31, 2005

must notify the Associate Administrator for Hazardous Materials Safety, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:

A handwritten signature in blue ink, appearing to read "R. Ryan Parker". The signature is fluid and cursive, with a large initial "R" and a long, sweeping underline.

for Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-31.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: sln

11/8/2005

Company Name City / State	Application Date	Issue Date	Expiration Date
Air Liquide America L.P. Houston, TX	Jul 26, 2005	Aug 23, 2005	Jun 30, 2007
Enterprise Products (formerly Ferrellgas) Inver Grove Heights, MN	Sep 13, 2005	Oct 31, 2005	Sep 30, 2009
ExxonMobil Chemical Company Edison, NJ	Jun 24, 2005	Jul 06, 2005	Jun 30, 2007
General Chemical West, LLC Parsippany, NJ	Sep 01, 2005	Sep 27, 2005	Jun 30, 2007
General Chemical, LLC Parsippany, NJ	Sep 01, 2005	Sep 27, 2005	Jun 30, 2007
Kraton Polymers, U.S. LLC Belpre, OH	Jul 22, 2005	Aug 23, 2005	Jun 30, 2007
Norco (North Collins Cyl Gas Co Inc.) North Collins, NY	Oct 24, 2005	Nov 08, 2005	Oct 31, 2009
TransChemical, Inc. St. Louis, MO	Jun 02, 2005	Jul 06, 2005	Jun 30, 2007

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125PA-99-6099-4

Federal Railroad Administration
Exemption Evaluation Form

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Part I **APPLICATION INFORMATION**

- 1A. Application Number: 12325-N
- 1B. Date of Application: July 23, 1999
- 1C. Applicant (Name, Address, & Phone Number):

Smart-Hose Technologies, Incorporated
 506 Elmwood Court Two
 Sharon Hill, PA 19079
 Mr. Andrew Abrams
 President and CEO

- 1D. Foreign Applicant: No
- 1E. Regulation(s) Exempted From: 49 CFR 174.67(i) AND (j)
- 1F. Mode(s) of Transportation: Rail
- 1G. Summary of What Applicant is Requesting:

Applicant is seeking relief from Section 174.67(i) and (j) to allow the unloading of railroad tank cars, containing hazardous materials described in paragraph 6 below, with a reduced level of attendance, provided that specially designed hoses, capable of preventing a catastrophic uncontrolled release of product is utilized.

Part II **HAZARDOUS MATERIALS INFORMATION**

2A. Hazardous Materials:

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/Division	Identification number	Packing Group
Hazardous materials as specified in 49 CFR 172.101 authorized for transportation in railroad tank cars.			

2B. Is the material capable of being detonated? No

(1) What special Precautions have been taken to prevent these conditions in transportation? N/A

(2) Has the hazardous material been classed as an explosive? No

If yes, has it been tested and approved? (173.86)

Is stabilization required and if so, what type?

2C. Other risks presented by the material that warrant special assessment (ex: flammable or toxic gases produced upon contact with water).

The materials pose no additional risk other than that posed by similar materials within the same hazard class.

Part III PACKAGING INFORMATION

Is the applicant seeking an exemption from the packaging requirements?

Yes (Proceed with the other items in this Part.)

No (Go on to Part IV.)

3A. Choose appropriate request:

Non authorized specification package.

Authorized specification packaging with quantity variation.

Over authorized pressure.

Non-specification package. Most compatible specification package.

Other. Specify: _____

3B. Is the material of construction appropriate?

3C. Will the package integrity be sufficient?

3D. In the case of a pressurized packaging, will the package adequately contain any pressure that might develop?

3E. Have evaluation of tests shown equivalent packaging?

3F. Are special handling requirements needed?

Specify:

Part IV TRANSPORT & INFORMATIONAL CONTROLS

Is the applicant seeking an exemption from Special Transport and Informational Controls?

- Yes (Proceed with other items in this Part.)
 No (Continue to Part V.)

4A. Indicate control (i.e. placarding requirements) from which variance is sought.

4B. Indicate what compensating factors will be used.

Part V SHIPPING EXPERIENCE

5A. Satisfactory shipping experience? Yes

5B. New package with no shipping experience? No

Part VI DOCKET COMMENTS: June 21, 2000

Part VII OVERALL EVALUATION & RECOMMENDATION

Provide rational supporting equivalent level of safety or comment on additional requirements needed to establish equivalency.

FRA believes an equivalent level of safety will exist and is supported in this application by the intent of the current regulations and previous exemptions issued to industry for relief from these regulations. Several safety controls and special provisions have been included in this exemption to ensure that a greater level of safety is provided. To summarize these inclusions:

Hoses

Only hoses manufactured by Smart-Hose Technologies, Incorporated may be used under this exemption. This is due to the fact that Smart-Hose (the applicant) has demonstrated an equivalent level of safety to that of having a person in physical attendance through the use of its hoses equipped with cable connected wedges, plungers, or flapper valves located at each end of the hose. These devices have been shown to restrict release of product in

the event of a catastrophic release, to that material in the hose. This reduction in released product is a significant safety improvement by reducing the environmental and human impact from such releases. The exemption requires that hoses use under this exemption be maintained in accordance with the hose manufacturer's written procedures, time frame, and acceptance criteria.

Monitoring

Monitoring will be conducted on-site by plant designated personnel at a level slightly below that required during unloading. As an explanatory note, the employee designated to monitor the transfer facility will be required to meet all regulatory requirements of an unloader except that, after determining that a problem exists, they need only activate the facility's emergency response procedures outlined in the written safety procedures. Signalling systems are authorized in addition to the monitoring personnel. In the absence of a signalling system, the unloading operation shall be inspected at least hourly and a log maintained indicating date and time of inspection.

Operating Requirements

During periods when No monitoring personnel are available but hoses remain connected, tank car and facility valves must be secured in the closed position, no product may be transferred and the requirements of §174.67(a)(2)&(3) remain in effect. A bi-directional derail must be installed as specified in the text of the exemption.

Written Safety Procedures

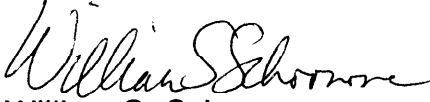
Written safety procedures must be implemented concerning use of this exemption, and must contain at least the following:

- a description of the facility and hours of operation;
- a drawing of the facility;
- procedures for monitoring the transfer facility;
- information on the contents of the car;
- procedures for securing the transfer facility and installing the required protective equipment;
- equipment available for employee safety and procedures for use of the identified equipment;

- procedures and limitations for movement of tank cars in the vicinity of the transfer facility;
- testing and maintenance of the system components including hoses and signalling systems;
- training requirements for designated employees responsible for monitoring the transfer facility;
- procedural steps to be followed in the event of an emergency; and
- procedures for reviewing incidents to determine whether the written procedures require revision or modification to prevent future occurrences and amending those procedures when the review necessitates change.

Part VIII CONCURRENCE

Federal Railroad Administration

Project Leader: 
Date: William S. Schoonover
June 21, 2000