Office of the City Manager

April 24, 2019

To: Honorable Mayor and Members of the City Council

From: Dee Williams-Ridley, City Manager

Subject: Cardboard Recycling Truck Fire and Foam in Codornices Creek

As you know, staff from around the City responded to the presence of firefighting foam in Codornices Creek on April 3, 2019. Staff from Public Works, Environmental Health, Fire, and Toxics worked to remove the soap-like foam, notify nearly 20 regulatory agencies and provide information to the California Department of Fish & Wildlife, which investigated the incident.

Fish & Wildlife has let us know that their testing and investigation is clear. They did not find any fault with the City or Berkeley Fire Department for their use of the foam. Their investigation found that the death of the fish was caused by the presence of this foam, and that the use of it by Berkeley Fire was appropriate.

Fish & Wildlife found 64 dead fish – 63 Central Coast California Steelhead Trout and 1 sculpin. They believe the total number of fish killed was not much more. Fish & Wildlife doesn't expect any long-term effect on the creek, in part because this foam biodegrades very quickly and because Codornices Creek has been so dutifully cared for by many, including community members, the City of Berkeley, the City of Albany and the University of California-Berkeley.

Out of an abundance of caution, the City's Environmental Health took the additional step to test the creek's water at multiple locations on April 5 and 8. Those tests found that the surfactant level – amount of fire foam-like materials – were at undetectable levels on April 5, two days after the incident. This is consistent with the material's known quality to biodegrade.

Fish & Wildlife believes the creek will fully recover. They don't believe all of the fish in the creek were affected. As a result, they believe that steelhead trout will likely repopulate Codornices Creek over time.

City staff averted a potentially explosive, deadly disaster and they followed proper protocols regarding foam on the burning cardboard in the truck, in the streets, in the storm drains, and in the creek. Nonetheless, this type of impact is nothing any of us would desire. Staff have been concerned about the impact and we have been collaborating across departments to examine how we might improve, a core value of our organization.

I also wanted to provide you with a full timeline to date of our response.

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Timeline

On Wednesday April 3, the driver of a cardboard recycling truck smelled smoke and immediately pulled over at around 9:54 a.m. in front of 1611 Rose Street near McGee – a heavily residential area that is two blocks from King Middle School. The crew called 9-1-1 and tried to extinguish the cardboard fire with a handheld fire extinguisher. After that failed, they tried to smother the fire by compressing the contents with the truck's compaction blade. That too, failed.

Berkeley Fire Department arrived at 10:03 a.m. and reported fire and smoke coming from the top of the vehicle. Firefighters noticed that flames threatened the truck's two compressed natural gas tanks, creating a highly explosive threat to nearby people and homes. They sprayed the garbage truck with Class A Firefighting Foam. Known commercially as PHOS-CHEK WD881 Class "A" foam, the substance is essentially a very heavily concentrated soap that creates suds when injected into the nozzle. This same product is used by the U.S. Forest Service when fighting wildfires in the wilderness. To help extinguish the fire, the Zero Waste crew ejected the contents onto the street at approximately 10:13 a.m. Per standard operating guidelines for this type of fire threat, the crew used 500 gallons of water per minute. Twenty gallons of foaming soap were injected at the standard, recommended firefighting rate: 0.3% PHOS-CHEK to water.

This type of fire is extremely dangerous. A similar garbage truck fire in Indianapolis in 2015 created an explosion that sent shrapnel in 360 degrees, including one compressed natural gas tank that flew a quarter of a mile. Protecting human life, including firefighters and civilian staff, is always our top priority. The front door of King Middle School was 0.2 miles away.

After the fire was extinguished and the area was safe for civilian staff, Public Works crews arrived onsite at approximately 10:15 a.m. This included a vactor truck and two street sweeping vehicles. Berkeley Police assisted with traffic control. A video of the cleanup was captured by a community member at around 12:26 p.m. Public Works crews finished removing the foam and water from the street shortly thereafter.

The nearest storm drain is two blocks from the incident. The heavy volume of water would have made the flow to the storm drain quite fast – minutes or less. From there, the water traveled underneath the street via storm water conveyance pipes another two blocks to enter Codornices Creek. Staff found out that the water was foaming in Codornices Creek at around 2:00 p.m. Environmental Health, Toxics, Fire and Public Works stormwater crews all responded that afternoon. The Fire Department notified more than 20 local, regional, state and federal agencies.

Cleanup and investigation efforts continued the following day, Thursday, April 4, with staff walking the length of the creek and removing foam and assisting regulatory agencies, such as California Fish and Wildlife. Though no foam was visible in the creek on Friday, April 5, Environmental Health tested the water on both April 5 and April 8. As mentioned earlier, the results that came back two weeks later showed that the surfactant levels on both testing dates were undetectable.

Attachments:

- Material Safety Data Sheet: PHOS-CHEK® WD881A Class A Foam Concentrate
- PHOS-CHEK® WD 881 CLASS A FOAM Environmental, Safety & Health Issues

cc: Paul Buddenhagen, Deputy City Manager
Matthai Chakko, Assistant to the City Manager
Dave Brannigan, Fire Chief
Phil Harrington, Director, Public Works
Kelly Wallace, Interim Director, Health, Housing & Community Services
Timothy Burroughs, Director, Planning
Karl Busche, Manager, Toxics Division
Ron Torres, Manager, Environmental Health
Jenny Wong, City Auditor
Mark Numainville, City Clerk

Safety Data Sheet

Where needs take us

RESPONSIBLE CARE®
OUR COMMITMENT TO SUSTAINABILITY

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: PHOS-CHEK® WD881A CLASS A FOAM CONCENTRATE
Reference Number: AST10177
Date: September 14, 2016

Company/Undertaking Identification:

ICL PERFORMANCE PRODUCTS LP
622 Emerson Road - Suite 500
St. Louis, Missouri 63141

Emergency telephone

In USA call CHEMTREC: 1 800 424 9300

Outside the USA, including ships at sea, call CHEMTREC's international and maritime telephone number (collect calls accepted):+1 (703) 527-3887

In Canada call CANUTEC: 1 613 996 6666

General Information: 1 800 244 6169 (Worldwide)

2. HAZARDS IDENTIFICATION

GHS

Warning

Irritating to Eyes (Category 2A)
H319 Causes serious eye irritation

Precautionary Statements
P264 Wash thoroughly after handling
P280 Wear eye protection/face protection
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	% by weight
Alpha-olefin Sulfonate Solution	- - - -	60 - 80
2,4-pentanediol, 2-methyl-	107-41-5	10 - 30
Water	7732-18-5	<6

Lauryl alcohol	68855-56-1	1 - 5
d-limonene	5989-27-5	<1

4. FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water for at least 15 minutes. If easy to do, remove any contact lenses. Get medical attention. Remove material from skin, eyes and clothing.

IF ON SKIN, immediately flush with plenty of water. Remove contaminated clothing. Get medical attention if irritation persists. Wash clothing before reuse.

IF INHALED, remove to fresh air. Immediate first aid is not likely to be required, if breathing. If breathing is difficult give oxygen. If not breathing, give artificial respiration. Get medical attention.

IF SWALLOWED, immediate first aid is not likely to be required. A physician or Poison Control Center can be contacted for advice.

5. FIRE FIGHTING MEASURES

FLASH POINT: Not combustible

EXTINGUISHING MEDIA: Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known

SPECIAL FIRE FIGHTING PROCEDURES IN ENCLOSED AREAS:

Phos-Chek® WD881A Solutions: There are no special hazards associated with dilute foam solutions as used for fire fighting.

Phos-Chek® WD881A Concentrate: If the concentrate becomes involved in a fire, fire fighters and others exposed to products of combustion should wear self-contained breathing apparatus and protective clothing. Equipment should be thoroughly cleaned after use.

6. ACCIDENTAL RELEASE MEASURES

Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and then place in a chemical waste container. Flush residual spill area with water.

Refer to Section 13 for disposal information and Sections 14 and 15 for reportable quantity information.

7. HANDLING AND STORAGE

HANDLING

Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

STORAGE

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. The reuse of this material's container for non-industrial purposes is prohibited and any reuse must be in consideration of the data provided in the MSDS.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE PROTECTION: Where there is significant potential for eye contact, wear chemical goggles and have eye flushing equipment available.

SKIN PROTECTION: Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove for given application.

Wear face shield and chemical resistant clothing such as a rubber apron when splashing is likely. Wash contaminated skin promptly. Launder contaminated clothing and clean protective equipment before reuse. Wash thoroughly after handling.

RESPIRATORY PROTECTION: Avoid breathing vapor or mist. Use NIOSH/MSHA approved respiratory protection equipment (full facepiece recommended) when airborne exposure limits are exceeded (see below). Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH/MSHA or the manufacturer. Respiratory protection programs must comply with 29 CFR 1910.134.

VENTILATION: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult NFPA Standard 91 for design of exhaust systems.

AIRBORNE EXPOSURE LIMITS:

Product/Component	OSHA PEL	ACGIH TLV
Phos-Chek WD881A	None established	None established
2,4-pentanediol, 2-methyl-	25 ppm ceiling	25 ppm ceiling

Components referred to herein may be regulated by specific Canadian provincial legislation. Please refer to exposure limits legislated for the province in which the substance will be used.

9. PHYSICAL AND CHEMICAL PROPERTIES

a) Appearance: Golden liquid
b) Odor: Similar to orange blossoms
c) Odor threshold: Undetermined.
d) pH: Undetermined
e) Melting point/freezing point: Undetermined
f) Initial boiling point and boiling range: Undetermined.
g) Flash point: Undetermined
h) Evaporation rate: Undetermined.
i) Flammability (solid, gas): Undetermined.
j) Upper/lower flammability or explosive limits: Undetermined.
k) Vapor pressure: Undetermined.
l) Vapor density: Undetermined.
m) Relative density: Undetermined
n) Solubility(ies) : Forms foam
o) Partition coefficient: n-octanol/water: Undetermined.
p) Auto-ignition temperature: Undetermined.
q) Decomposition temperature: Undetermined.
r) Viscosity: Undetermined.

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

STABILITY: Product is stable under normal conditions of storage and handling.

MATERIALS TO AVOID: None known

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, partially oxidized hydrocarbons, smoke and soot.

HAZARDOUS POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

Data from ICL Performance Products LP single-dose (acute) animal studies with this material are given below:

Phos-Chek WD881A Fire Suppressant Foam Concentrate

Oral -	Practically Nontoxic	(Rat LD_{50}, > 5,050 mg/kg)
Skin -	No More Than Slightly Toxic	(Rabbit LD_{50}, > 2,020 mg/kg)
Eye Irritation -	Moderately Irritating	(Rabbit 24-hr 24.7/110.0)
Skin Irritation -	Slightly Irritating	(Rabbit 24-hr 1.8/8.0)

Phos-Chek WD881A Fire Suppressant Foam Solution (1% solution in water)

Oral -	Practically Nontoxic	(Rat LD_{50}, > 5,050 mg/kg)
Skin -	No More Than Slightly Toxic	(Rabbit LD_{50}, >2,020 mg/kg)
Eye Irritation -	Practically non irritating	(Rabbit 24-hr 2.0/110.0)
Skin Irritation -	Non Irritating	(Rabbit 4-hr 0.0/8.0)

12. ECOLOGICAL INFORMATION

Environmental Toxicity

The following data have been classified using the criteria adopted by the European Economic Community (EEC) for aquatic organism toxicity.

96-hr LC_{50} Rainbow Trout,16.8 mg/l, Harmful

Due to the sensitivity of aquatic life to chemicals, we do not recommend the application of WD881A directly into streams or others bodies of water. WD881A meets the requirements of USDA Forest Service Specification 5100-307a.

Environmental Fate

Readily biodegradable

13. DISPOSAL CONSIDERATIONS

This material when discarded is not a hazardous waste as that term is defined by the Resource, Conservation and Recovery Act (RCRA), 40 CFR 261. Dispose of by incineration or recycle in accordance with local, state and federal regulations. Consult your attorney or appropriate regulatory officials for information on such disposal.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

IMDG/UN	not hazardous for transportation
ICAO/IATA	not hazardous for transportation
RID/ADR	not hazardous for transportation
Canadian TDG	not hazardous for transportation
US DOT	not hazardous for transportation

15. REGULATORY INFORMATION

TSCA Inventory:	Listed
DSL Inventory:	Listed
WHMIS Classification:	D2 (B) - Materials Causing Other Toxic Effects

SARA Hazard Notification

Hazard Categories Under Title III Rules (40 CFR 370): Immediate
Section 302 Extremely Hazardous Substances: Not Applicable
Section 313 Toxic Chemical(s): Not Applicable

CERCLA Reportable Quantity: Not applicable
California Proposition 65: Not applicable

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation and the MSDS contains all the information required by the Canadian Controlled Products Regulation.

Refer to Section 11 for OSHA/HPA Hazardous Chemical(s) and Section 13 for RCRA classification.

16. OTHER INFORMATION

	Health	Fire	Reactivity	Additional Information
Suggested NFPA Rating	2	0	0	
Suggested HMIS Rating	2	0	0	G G = Safety glasses, gloves, dust & vapor respirator

Reason for revision: Section 3 Supersedes MSDS dated: May 22, 2015
Product Use: Fire Suppressant

PHOS-CHEK®
Fire Retardant, Class A Foam & Gel

PHOS-CHEK® WD 881 CLASS A FOAM

ENVIRONMENTAL, SAFETY & HEALTH ISSUES

Introduction

ICL-Performance Products LP, through our product stewardship program, develops, designs, manufactures, markets, and disposes of our products so that they meet societal needs and do not pose undue risk to human health and the environment during all stages of their life cycles. We continuously work with customers to be sure that these principles are followed, also, in end-use applications. We encourage the use of good industrial hygiene practices in the handling of Phos-Chek WD 881 Class A foam concentrate and good common-sense practices in the end-use application of the product in fire fighting. The Material Safety Data Sheet should always be consulted as the primary source of health and safety information. This document will provide additional guidance on the handling and use of Phos-Chek WD 881 Class A foam concentrate and its solutions.

What is Phos-Chek WD 881?

Phos-Chek WD 881 is a foam forming water additive designed for use on Class A fires; those defined by the National Fire Protection Association (NFPA) as fires in ordinary combustible materials such as wood, cloth, paper, rubber, and many plastics.

What does Phos-Chek WD 881 contain?

WD 881 contains a surfactant or wetting agent commonly used in shampoos and other cleaning compounds. Surfactants and wetting agents are terms that are used interchangeably for chemicals which reduce the surface tension of water so that it will more continuously cover and penetrate or soak into porous materials (such as wood) on which it is applied. The surfactant is dissolved in a mixture of water and organic solvents in order to change it from a solid to a more user-friendly liquid that can be easily metered and mixed with water. Phos-Chek WD 881 concentrate contains, also, a small amount of an additive which increases foam stability so that its contained water will remain in contact with the fuel long enough to increase penetration and absorption. The characteristic "orange blossom" aroma of WD 881 is due to the presence of a small amount of an organic solvent that is extracted from orange peel.

PHOS-CHEK®

Fire Retardant, Class A Foam & Gel

Why do we call WD 881 a Class "A" foam rather than just a fire fighting foam?

There are several different types of water additives that are recommended for use in fire suppression. These include a number of different types of foams; e.g. those that have been formulated for use in extinguishing flammable, liquid hydrocarbon pools or tanks which are on fire. These are commonly referred to as AFFF (aqueous film forming foams), FFFP (film forming fluoroprotein foams), and AR (alcohol resistant) AFFF's. Flammable liquids are classified as Class B fuels so these foam types are often referred to as Class B foam concentrates. Phos-Chek WD-881 is referred to as a Class A foam to readily distinguish it from those formulated specifically for use on fires involving Class B fuels.

How is WD 881 used?

Phos-Chek WD 881 concentrate is mixed with water at very low concentrations (0.1 to 1.0% by volume) to prepare solutions. For example, 0.3 gallons of WD 881 concentrate is mixed with 99.7 gallons of water to prepare a 0.3% solution. Also, for example, a use concentration of 0.5% is prepared by mixing 0.5 gallon of concentrate with 99.5 gallons of water. This solution is then mixed with air to form the fire fighting foam that is subsequently applied to the burning or endangered fuels.

What effect will the use of Phos-Chek WD 881 have on my health?

The acute toxicity of Phos-Chek WD 881 concentrate and its solutions has been extensively tested. Acute toxicity refers to the effect of short-term exposure such as a single contact or ingestion. These tests revealed that the concentrated product is practically non-toxic at even the highest anticipated levels of exposure. No significant adverse health effects would be expected to develop if only a small amount (mouthful) is swallowed. If swallowed, immediate first aid is not likely to be required. A physician or poison control center can be contacted for advice.

However, strong eye irritation and moderate skin irritation is experienced when the concentrate is allowed to get into the eye or remain in contact with the skin without washing it off. The degree of irritation, in both cases, is similar to that which would be expected from a general service, high performance liquid soap. It is recommended that skin and clothing that comes in contact with the concentrated product be washed at the earliest opportunity. All toxicity testing was conducted by independent testing laboratories using EPA protocols under the auspices of the U.S. Department of Agriculture, Forest Service.

The long term, or continual, exposure of workers to the surfactant ingredient which is present in Phos-Chek WD 881 concentrate and its solutions has been tested also. It was found not to pose a significant hazard to human health during its manufacture or subsequent use. It, and all other ingredients present in WD 881, have been studied by the U.S. Food and Drug Administration and approved for use in various types of indirect food additives.

Water solutions of Phos-Chek WD 881, at the recommended use concentration, will contain at least 99% by volume water. Thus, toxic impacts from its solutions will be far less than from the concentrated agent. It should be recognized, however, that such solutions will exhibit a much lower surface tension and will, consequently, penetrate through clothing, leather footwear and other potentially absorbent apparel to a greater extent than water alone. Also, as water evaporates from the solution and the concentrate strength increases, chapping and skin irritation can become greater. For this reason, it is recommended that even dilute foam solutions be removed from the skin as soon as this is convenient. Also, contaminated clothing should be washed prior to reuse.

What effect will use of Phos-Chek WD 881 have on the environment?

Is it biodegradable?

Many, but not all, chemicals that consist primarily of carbon, hydrogen, and oxygen are degraded and ingested by naturally occurring bacteria in the soil, air and water. When this occurs, bacterial enzymes (digestive juices) break the chemical into its individual elements that can then be consumed (used for food) by the bacteria. Phos-Chek WD 881 contains biodegradable organic compounds that after use are converted by bacteria to carbon dioxide. Biodegradation, in effect, removes product residues from the environment eliminating potential accumulation in nature.

Phos-Chek WD-881 has been extensively tested and has met the recognized criteria for being classified as biodegradable in water systems. Testing has been conducted using three different types of measurements of biodegradability.

Measurement of oxygen depletion in a closed system: Phos-Chek WD-881 was tested by an independent laboratory under OECD Guideline 301D in which the rate of depletion of dissolved oxygen is measured as a function of time. The product successfully passed this test, showing >60% biodegradation in 28 days. These results confirmed similar Monsanto studies in which BOD and COD were measured at 28 days.

BOD testing was also conducted after only 5 days of exposure. Those tests showed that 30% biodegradation occurred during this initial period. This indicates that Phos-Chek WD-881 should not place a great immediate oxygen demand on the receiving waters and

should, consequently, result in a reduced rate of oxygen depletion in the stream and less probability of fish kill from oxygen depletion.

Measurement of carbon dioxide evolution in an aerated system: Phos-Chek WD-881 was tested by an independent laboratory using OECD Guideline 301B in which the rate of generation of carbon dioxide from biodegradation is measured. The product successfully passed this test, showing >60% of the theoretical carbon dioxide evolved in 28 days. This result confirmed Monsanto studies in which an earlier version of the product, Phos-Chek WD-861, was tested using a similar method.

Measurement of disappearance of dissolved organic carbon in an aerated system: Phos-Chek WD-881 was tested by an independent laboratory using OECD Guideline 302B in which the rate of disappearance of dissolved organic carbon (DOC) is measured. The product successfully passed this test, showing >70% removal of dissolved organic carbon in 14 days.

These data, obtained by methods emulating many of the conditions found in the real-world environment, lead the user to a degree of comfort that Phos-Chek WD-881 residues which enter the water environment will disappear after a reasonable period of time. This does not mean, however, that it is acceptable to flush large volumes of either Phos-Chek WD 881 concentrate or its water solutions into waste treatment facilities, streams or other bodies of water. Large volumes of even a biodegradable additive can shock or otherwise interfere with the operation of a waste treatment facility and disrupt the ecosystem.

We have also tested Phos-Chek WD-881 for it's ability to biodegrade in soil. The product successfully degraded, showing 62% of the theoretical carbon dioxide evolved in 97 days. This leads to the conclusion that Phos-Chek WD-881 residues that remain in the soil after normal use will degrade in a reasonable time. More concentrated solutions, such as might occur from a small spill of foam concentrate, may require more time to be diluted by rainfall before they will degrade.

Is it harmful to plants and vegetation?

The impact of Phos-Chek WD 881 solutions on vegetation has not been studied. However, millions of gallons of WD 881 solutions containing 0.3 to 0.6% of the concentrate have been applied by both aerial and ground application on wildland fires during the past eleven years with no report of vegetative mortality.

There have been reports of needle browning when a Class A foam formulation containing a relatively large concentration of alcohol was applied on evergreen trees. We are not aware that these reports have been confirmed, however.

Will it kill fish?

Testing has been conducted to ascertain the impact of WD 881 spills and applications on several aquatic dwelling organisms. The data indicate that the concentrate is slightly to moderately toxic to fish - more so to fingerlings than to larger species. Spills of large volumes of concentrate or foam solution, such as a helicopter load of solution or a full drum of concentrate, into a lake or stream could result in a fish-kill.

Application of foam solutions on or near the edge of bodies of water should be avoided although significant impact in this case would be questionable because of the extremely low use concentrations. Moderate amounts of product run-off or foam that is flushed into streams after normal use will not likely cause a fish-kill. When amphibious aircraft scoop water from lakes and rivers, some foam solution will be expelled because of residues in the tanks and the expelling of solution from over filled tanks. Analyses of water following such an operation by the Province of Quebec (Canada) failed to find detectable quantities of the foam concentrate present the day following the operation.

Will Phos-Chek WD 881 solutions leach into groundwater?

With the highly dilute use concentrations, ground water concerns have not and would not be expected from the application of Phos-Chek WD 881 solutions. A limited number of analyses from studies in Newfoundland showed no measurable concentration of Phos-Chek WD 881 ingredients in water from 8' deep wells after repeated application of the foam. We would assist in the analyses of water if concerns should arise in the future.

Is it harmful to wildlife or farm animals?

The acute toxicity of Phos-Chek WD 881 foam solutions was studied by the National Biological Service. These studies indicated that no toxicity should be encountered at the highest practical exposure level. The data indicates, also, that foam residues remaining on vegetation after normal use in fire fighting operations is unlikely to cause harm if subsequently ingested by animals. The reaction of the digestive systems of animals varies significantly among species, however. Thus we recommend that if domestic animals such as cows or horses eat a large amount of Phos-Chek WD 881, a veterinarian or Animal Poison Control Center be contacted for advice specific to the situation.

What should I do if Phos-Chek WD 881 concentrate is spilled?

All spills of all chemicals, including Phos-Chek WD 881 concentrate, should be contained to minimize ground saturation and to prevent runoff into bodies of water. If the volume of concentrate spilled is large (greater than a few gallons), it should be contained with an earthen dike or other barrier. It should then be cleaned up with a shop-

vac system or some similar equipment, filtered to remove contaminants and reused if possible. If reuse is not possible, the collected material should be incinerated. Any liquid remaining on the ground after this should be absorbed with oil-dry type product, sand, sawdust or some similar compound, which then can be incinerated or placed in a landfill if the landfill authorities will accept it. The contaminated surface area can then be flushed with water if needed. Smaller spills that do not need containment should be absorbed the same way. It may not be necessary to dispose of the cleanup from this product as hazardous waste since there is nothing in Phos-Chek WD 881 that would classify it as hazardous waste. However, this may vary in some jurisdictions, such as the State of California, where concentrate spills could generate hazardous waste. It is, therefore, recommended that the regulations of the jurisdiction where the spill occurs be considered in determining how best to handle cleanup debris.

How should I handle clean-up of Phos-Chek WD 881 solutions that were applied in fire suppression?

Phos-Chek WD 881 foam solution applied on vegetation for fire suppression activities does not require clean-up. The foam will collapse within a few hours, at most, and the released foam solution will penetrate into the soil where it will biodegrade. If applied on hard surfaces such as driveways or sidewalks, it can be flushed into the sewer with plenty of water. Low velocity water streams will more successfully flush the area without forming additional foam.

When Phos-Chek WD 881 foam solution is applied for structure protection, it can be washed off with water. Again, water will be released from the foam and the product residues will then be biodegraded in the soil. If used within a structure, it can be picked up in the same manner as water. In this case, however, the surfaces that came in contact with the foam solution should be washed with plain water to remove any residues prior to repainting.

Are there any specific regulatory requirements or reporting that I must follow when using Phos-Chek WD 881?

Most Class B and some Class A foam additives contain components which are classified as hazardous wastes (e.g. diethylene glycol butyl ether, tertiary butanol, etc.). Phos-Chek WD 881 Class A foam concentrate does not contain components that necessitate its collection and disposal as a hazardous waste. Note that this is true of WD 881 but may not be true of all Class A agents. The Material Safety Data Sheet provided by the manufacturer should be consulted in order to determine the safety of other products.

None of the ingredients of Phos-Chek WD 881 Class A foam are on the traditional federal regulatory management lists such as the SARA 313 emission reporting list or the CERCLA spill reporting list. We would encourage, however, reporting to appropriate local authorities any significant spill of foam concentrate that enters a waterway or is not cleaned up.

4/1/08