January 16, 2014

Christopher J. Bradbury
Administrator/Clerk
Village of Rye Brook
938 King Street
Rye Brook, NY 10573

RE: Westchester County Airport Stormwater Management – Deicing Practices and Systems to Monitor and Limit Impact of Deicing Activities on the Environment

Dear Mr. Bradbury,

Thank you for contacting us concerning the odor complaints received recently from Rye Brook residents. We appreciate the opportunity to provide you with detailed information concerning the aircraft deicing operations at the Westchester County Airport as related to this matter.

During the weekend of January 4-5, 2014, the Village of Rye Brook PD received numerous communications from residents alerting them to a strong odor in their neighborhoods which caused great concern because the smell was unfamiliar. Understandably the residents requested the local authorities to investigate the odor to determine if it was a gas leak or some other significant event. Unfortunately, this resulted in a burden on Rye Brook emergency services, and distressed the citizens of your community. For this, we apologize.

Safe, all weather commercial aviation, such as is conducted at the Westchester County Airport, is dependent upon aircraft and airport operating surfaces deicing. Airport deicing operations are conducted pursuant to FAA regulatory requirements and, in the case of commercial aircraft, the specific requirements of each airline.

At Westchester County Airport commercial aircraft deicing is conducted by an Airport contractor, and airfield deicing is conducted by Airport staff.

It is well known that deicing can impose environmental impacts, particularly to surface water quality, which is why government regulations and best management practices have been developed to limit those impacts. It is known that when propylene glycol based deicing products, such as those used at Westchester County Airport, decompose in the environment, pungent odors can result.

At Westchester County Airport, the effort to protect the environment from the impact of deicing activities includes limiting Aircraft deicing to collection pads designed to capture and store, for treatment at wastewater treatment facilities, all stormwater laden with spent deicing fluids, as well as the monitoring of the quality of stormwater discharges from the airport to Blind Brook and tributaries to Rye Lake. (Go to http://airport.westchestergov.com/environmental-management-system/stormwater-management). This water quality monitoring is conducted in accordance with a Phase 1 stormwater discharge permit – State Pollution Elimination Discharge System (SPDES) Permit No. NY0075132 – issued by the New York State Department of Environmental Conservation (NYSDEC) pursuant to the Federal Clean Water Act. Currently, the airport environment department collects water samples from five water quality sampling points on the airport every month, including at two points where stormwater discharges to the Blind Brook. These samples are submitted to a certified water quality testing laboratory for analysis of the water quality

"parameters" specified in the Airport's SPDES permit. Based upon the laboratory's results, the environmental department completes a monthly Discharge Monitoring Report (DMR) and submits it to the NYSDEC. NYSDEC inspects the Airport stormwater facilities annually during the deicing season.

The weather conditions we have experienced in this region over the past 30 days have been challenging to our continuing efforts to maintain operational reliability and ensure the safety of each flight as well as protect the environment. As a result, the amount of aircraft deicing fluid and runway deicer used to maintain our operational commitments and safety has been high for this time of year.

The aircraft deicing fluid that is utilized at the airport is propylene glycol based. Propylene glycol can be found in many food products, shampoos, and cosmetics. Propylene glycol is highly water soluble. The two types of deicing fluids are Type I and Type IV. Generally the Type I product used in cold weather conditions is a 50/50 mixture of propylene glycol and hot water. It is sprayed onto the aircraft under pressure to remove the frozen contamination from aircraft surfaces. The Type IV is 100% propylene glycol and is used in a gel like formulation as an anti-icing agent that is only applied during active frozen precipitation to protect the aircraft surfaces from ice contamination during aircraft departures. The deicing crews have reported that deicing fluid presents a sweet taste when the spray mist inadvertently gets in their mouth.

Spent deicing fluid that is not captured on the deicing pad, called fugitive spent deicing fluid, travels dissolved in surface water flow and can break down quickly in the environment. Even at very low dissolved concentrations, decomposing propylene glycol will give off a very distinctive pungent odor. The fumes in such low concentrations are not hazardous (see MSDS attached), but again, it is not an odor that the general public would normally recognize. Generally, in the case of Westchester County Airport, these odors occur, if at all, on or in close proximity to the airport, because the decomposition of the fugitive deicing fluids occurs mostly in the airport's storm water detention ponds. However, we have learned that with the extremely cold temperatures and ice cover in the detention ponds as we have experienced recently, it appears the decomposition of the deicing fluid was delayed and occurred further downstream in the Blind Brook watershed, impacting neighborhoods that had not been previously experienced the odor.

In an effort to mitigate the likelihood of a recurrence of these odor impacts, the Airport will begin working to install aeration systems in each of its two detention basins, so as to reduce ice formation and induce the decomposition of the propylene glycol in the basins. The Airport will also evaluate with its stormwater engineer the possibility of retrofitting the outfall of each basin to elevate the discharge pipe so that the discharge is drawn from a higher point in the water column which should hold a lower concentration of propylene glycol. It is anticipated that each of these actions will help mitigate odors experienced off the Airport property.

Regarding the possible evaluation of alternative deicing methods, the County has conducted a series of studies of deicing practices and evaluations of deicing alternatives beginning in 2001. The first phase of the construction of the rehabilitated and improved deicing pad and spent deicing fluid collection and storage system developed through this extended evaluation process was completed in 2013 and construction of the next phase will begin this Spring.

Regarding the possibility of deploying alternative chemical deicing products consistent with airline requirements and Federal regulations, the aviation industry is constantly evaluating deicing techniques and practices. Westchester County Airport uses a highly professional firm to conduct its

deicing operations, and stands ready to evaluate and deploy any new systems, chemicals or practices suited to its operations that may become available and that will reduce the environmental impacts of deicing. Evidence of this commitment is the County's purchase of vacuum trucks to vacuum up spent deicing fluid on the deicing pad so as to reduce the possibility that it will escape to surface waters, and its purchase of a deicing fluid blender to allow for the use of deicing product with less propylene glycol mixed with the hot water when weather conditions and FAA regulations permit.

As always, the County will continue to make every effort to insure that Westchester County Airport is a good neighbor and to protect our environment while operating in a safe and efficient manner. If representatives of the Village of Rye Brook would like to meet with County and Airport representatives to discuss this matter further and inspect Airport deicing facilities, we stand ready to make those arrangements.

Thank you again for providing the opportunity to respond to your questions and concerns.

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Robert Funicello
Environmental Project Director

Kilfrost

MATERIAL SAFETY DATA SHEET

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1. PRODUCT NAME

Kilfrost ABC-S Plus

DESCRIPTION

Aircraft de-/anti-icing fluid, Type IV. Complies with specification AMS 1428.

SUPPLIED IN THE USA BY:

Kilfrost Incorporated
6250 Coral Ridge Drive
Suite 130
Coral Springs, Florida
33076, USA

CONTACT NUMBERS

Working Hours: 954 282 5050
Emergency: 954 558 7268
Alt emergency: 954 756 5645
FAX: 954 282 5049
Email: infoamericas@kilfrost.com

SUPPLIED IN EUROPE BY:

Kilfrost Limited
Albion Works
HALTWHISTLE
Northumberland
NE49 0HJ
ENGLAND

CONTACT NUMBERS

Working Hours: (01144 1434) 320332
Other Times: (01144 1228) 573614
FAX: (01144 1434) 321463
Email: info@kilfost.com

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2. COMPOSITION

2.1 Aqueous monopropylene glycol mixture.

2.2 Contains a minimum of 50% monopropylene glycol.

CAS no. 57-55-6 EINECS no. 200-338-0

3. HAZARD IDENTIFICATION

3.1	Inhalation	Considered to be non-hazardous.
3.2	Skin	Unlikely to cause irritation.
3.3	Eyes	May cause temporary irritation.
3.4	Ingestion	Considered to be non-hazardous.
3.5	Occupational Exposure Limits	An exposure limit has been set for Monopropylene Glycol (synonym Propane-1,2-diol). This applies in the UK only.

UK (EH 40) WEL

Total (vapor & particulates)	150 ppm (470 mg/m^3) (8hr TWA)
Particulates	-ppm (10 mg/m^3) (8hr TWA)

ACGIH	TLV – TWA	No limit assigned.
FRANCE	VME	No limit assigned.
GERMANY	MAK	No limit assigned.

4. FIRST AID MEASURES

4.1	Ingestion	Give large quantities of water to drink. Consult medical personnel.
4.2	Skin contact	Wash off in flowing water. Launder contaminated clothing before re-use.
4.3	Eye contact	Irrigate with water for 5 minutes. Obtain medical assistance if irritation persists.
4.4	Inhalation	Move to fresh air if feeling ill. Consult medical personnel if symptoms persist.

5. FIRE FIGHTING MEASURES

5.1	Flash point (closed cup)	None below boiling point.
5.2	Auto ignition temperature	446°C
5.3	Explosion limits	No data.
5.4	Specific fire-fighting procedures	None.
5.5	Unusual fire hazards	The product may become combustible After prolonged heating at the boiling point.
5.6	Extinguishing media	Water, foam, Carbon Dioxide, dry powder.
5.7	Hazardous decomposition products	Incomplete combustion may produce Carbon Monoxide and other harmful gases/vapors.

6. ACCIDENTAL RELEASE MEASURES

For Chemical Emergency

Spill, Leak, Fire, Exposure, or Accident

Call CHEMTREC Day or Night

Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

6.1 Contain spillage and absorb on suitable material e.g. sawdust, sand or earth. Transfer to a container for disposal. See section 13.

6.2 Wash the spillage area with plenty of water.

7. HANDLING AND STORAGE

7.1 Avoid contact with skin and eyes. Avoid breathing mists/vapors when spraying.

7.2 Store in tightly sealed original containers, away from direct heat and strong oxidizing agents.

7.3 Do not use uncoated mild steel tanks. For advice on bulk and/or heated storage contact Kilfrost

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Maintain sufficient ventilation to comply with 'Workplace Exposure Limit'.

8.2 Wear eye protection if splashing is possible. An eye wash bottle should be available.

8.3 Gloves and protective overalls recommended if prolonged contact is likely.

9. PHYSICAL AND CHEMICAL PROPERTIES

		Typical Values
9.1	Appearance	Clear, green fluid (or colorless subject to customer demands).
9.2	Odour	None.
9.3	pH (20°C)	7
9.4	Boiling point	104°C
9.5	Flammability data	See 5.1 – 5.3
9.6	Vapour pressure (20°C)	15 mm Hg
9.7	Specific gravity (20°C)	1.038
9.8	Vapour density (air = 1)	1.0 (estimated)
9.9	Freezing point	
	100%	-37°C
	75% v/v	-22°C
	50% v/v	-11°C
9.10	Brookfield LVT Viscosity (Spindle No. 1 or 2; 0.3 rpm)	
	20°C	25,000 mPas
	-25°C	12,000 mPas
9.11	Specific heat	
	20°C	3.6 J/g/°C
	70°C	3.7 J/g°C
9.12	Solubility in water	Completely miscible.

10. STABILITY AND REACTIVITY

10.1 Stable under normal storage conditions.

10.2 Incompatible materials – strong oxidizing agents.

11. TOXICOLOGICAL INFORMATION

11.1	Considered to have low oral toxicity. See also section 3.	
11.2	LD50 (rat – oral)	> 2000 mg/Kg (OECD 401 est.)
11.3	LC50 (zebra fish)	> 1000 mg/L (OECD 203, 96h)
11.4	EC50 (daphnia)	1350 mg/L (OECD 202, Part I, 48h)
11.5	EC50 (bacteria)	>1000 mg/L (DIN 38412, Part 8, 16h)

12. ECOLOGICAL INFORMATION

12.1	BOD5	354 mg O2/g fluid (OECD 301D)
12.2	COD	834 mg O2/g fluid (OECD 301D)
12.3	Biodegradability	readily biodegradable (OECD 301E)
12.4	Water Danger Class (WGK)	1

13. DISPOSAL CONSIDERATION

13.1 Controlled incineration or landfill in accordance with local, state or national regulations.

14. TRANSPORT INFORMATION

14.1 Not restricted under any transport regulations.

15. REGULATORY INFORMATION

15.1 Not classified as hazardous under any regulations.

16. OTHER INFORMATION

16.1 All components are registered in accordance with EINECS AND TSCA.
16.2 All components are preregistered in accordance with REACH.

The information contained herein is based on the present state of our knowledge. No responsibility is accepted that the information is sufficient or correct in all cases.

Date: Feb 22, 2012

Kilfrost

MATERIAL SAFETY DATA SHEET

1. PRODUCT NAME

Kilfrost DF PLUS (88)

DESCRIPTION

Aircraft de-icing fluid, Type I.
Complies with specifications ISO 11075 and AMS 1424.

SUPPLIED IN THE USA BY:
Kilfrost Incorporated
6250 Coral Ridge Drive
Suite 130
Coral Springs, Florida
33076, USA

CONTACT NUMBERS
Working Hours: 954 282 5050
Emergency: 954 558 7268
Alt emergency: 954 756 5645
FAX: 954 282 5049
Email: infoamericas@kilfrost.com

SUPPLIED IN EUROPE BY:
Kilfrost Limited
Albion Works
HALTWHISTLE
Northumberland
NE49 0HJ
ENGLAND

CONTACT NUMBERS
Working Hours: (01144 1434) 320332
Other Times: (01144 1228) 573614
FAX: (01144 1434) 321463
Email: info@kilfost.com

2. COMPOSITION

2.1 Aqueous monopropylene glycol mixture.

2.2 Contains a minimum of 88% monopropylene glycol.

3. HAZARD IDENTIFICATION

3.1	Inhalation	Considered to be non-hazardous.
3.2	Skin	Unlikely to cause irritation.
3.3	Eyes	May cause temporary irritation.
3.4	Ingestion	Considered to be non-hazardous.
3.5	Occupational Exposure Limits	An exposure limit has been set for Monopropylene Glycol (synonym Propane-1,2-diol). This applies in the UK only.
	UK (EH 40) OES	
	Total (vapour & particulates)	150 ppm (470 mg/m^3) (8hr TWA)
	Particulates	- ppm (10 mg/m^3) (8hr TWA)
	ACGIH TLV – TWA	No limit assigned.
	FRANCE VME	No limit assigned.
	GERMANY MAK	No limit assigned.

4. FIRST AID MEASURES

4.1	Ingestion	Give large quantities of water to drink. Consult medical personnel.
4.2	Skin contact	Wash off in flowing water. Launder contaminated clothing before re-use.
4.3	Eye contact	Irrigate with water for 5 minutes. Obtain medical assistance if irritation persists.
4.4	Inhalation	Move to fresh air if feeling ill. Consult medical personnel if symptoms persist.

5. FIRE FIGHTING MEASURES

5.1	Flash point (closed cup)	None below boiling point.
5.2	Auto ignition temperature	446°C
5.3	Explosion limits	No data.
5.4	Specific fire-fighting procedures	None.
5.5	Unusual fire hazards	The product may become combustible after prolonged heating at the boiling point.
5.6	Extinguishing media	Water, foam, Carbon Dioxide, dry powder.
5.7	Hazardous decomposition products	Incomplete combustion may produce Carbon Monoxide and other harmful gases/vapours.

6. ACCIDENTAL RELEASE MEASURES

For Chemical Emergency
Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night

Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

6.1 Contain spillage and absorb on suitable material e.g. sawdust, sand or earth. Transfer to a container for disposal. See section 13.

6.2 Wash the spillage area with plenty of water.

7. HANDLING AND STORAGE

7.1 Avoid contact with skin and eyes.

7.2 Avoid breathing mists/vapours when spraying.

7.3 Store in tightly sealed original containers, away from direct heat and strong oxidising agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Maintain sufficient ventilation to comply with 'Occupational Exposure Standard'.
8.2 Wear eye protection if splashing is possible. An eye wash bottle should be available.
8.3 Gloves and protective overalls recommended if prolonged contact is likely.

9. PHYSICAL AND CHEMICAL PROPERTIES Typical Values

9.1	Appearance	Clear, orange fluid.
9.2	Odour	None.
9.3	pH (20°C)	8.0 – 9.0
9.4	Boiling point	117°C
9.5	Flammability data	See 5.1 – 5.3
9.6	Vapour pressure (20°C)	10 mm Hg
9.7	Specific gravity (20°C)	1.043
9.8	Vapour density (air = 1)	1.6 (estimated)
9.9	Freezing point	
	100%	below -60°C
	50% v/v	-25.3°C
9.10	Viscosity	
	20°C	38 mPas
	0°C	79 mPas
	-20°C	290 mPas
9.11	Specific heat	
	20°C	2.9 J/g/°C
	70°C	3.2 J/g°C
9.12	Solubility in water	Completely miscible.

10. STABILITY AND REACTIVITY

10.1 Stable under normal storage conditions.

10.2 Incompatible materials – strong oxidising agents.

11. TOXICOLOGICAL INFORMATION

11.1 Considered to have low oral toxicity. See also section 3.

11.2 LD_{50} (rat – oral) > 10g/Kg (est)

11.3	LC_{50}	(Pimephales Promelas)	*5,475 mg/L*	*(96h)*
11.4	LC_{50}	(Daphnia Magnia)	10,000 mg/L	(48h)

12. ECOLOGICAL INFORMATION

12.1	COD	0.11 Kg O_2/Kg fluid
12.2	BOD_5	0.08 Kg O_2/Kg fluid
12.3	5 day BOD/COD	0.73

13. DISPOSAL CONSIDERATION

13.1 Controlled incineration or landfill in accordance with local, state or national regulations.

14. TRANSPORT INFORMATION

14.1 Not restricted under any transport regulations.

15. REGULATORY INFORMATION

15.1 Not classified as hazardous under any regulations.

16. OTHER INFORMATION

16.1 All components are registered in accordance with EINECS AND TSCA.
16.2 All components are preregistered in accordance with REACH.

The information contained herein is based on the present state of our knowledge.
No responsibility is accepted that the information is sufficient or correct in all cases.

Date: May 18, 2010