

Code of Practice

for the prevention of water
pollution
from the storage and handling
of **fluid** fertilisers



The Fertiliser Manufacturers Association



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Code of Practice

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Produced in consultation with the

Environment Agency England

Environment Agency Wales

Scottish Environment Protection Agency Environment and

Heritage Service Northern Ireland

Preface

If you are a manufacturer, supplier, haulier or user of fluid fertilisers you are handling materials which, if spilled in quantity, can be very damaging to the water environment. This Code of Practice has been drawn up to help you to reduce the risk of causing water pollution as a result of losing fluid fertiliser from storage facilities, whether at site of manufacture, during transfer, or at the farm.

There is clear economic benefit to supplier and user alike in reducing losses, whether from accidental spillage, poor management practices or vandalism. Any of these could result in water pollution which could have serious consequences, both legal and financial. The costs of pollution clean-up and any fish restocking for example would be charged to the polluter.

With some forethought and planning for emergencies you should be able to answer the question: ‘What would be the consequences of a major spillage of fluid fertiliser at your site?’

You must know your site and the surrounding drainage system and what to do and how to react to an accident or emergency so as to minimise the chances of causing pollution. Preplanning is essential so that you avoid having to deal with a real incident unprepared.

Pollution of surface waters by fertiliser is a serious matter but at least it is possible to monitor it directly and carry out remedial action, albeit at some cost. If groundwater is contaminated because a major spillage of fluid fertiliser onto the ground is allowed to soak away it is impossible to monitor the effects except by costly techniques

and it may be impossible to remedy. Pollution of groundwater is potentially very serious because this water can be used extensively for public drinking water supplies and for industrial and agricultural use. The Environment Agencies’ have identified all groundwater resources and have specific policies for the protection of sources through the control of activities and development in close proximity to source extraction boreholes.

Groundwater resources and extraction boreholes are valuable and expensive assets. It is essential that those producing or storing fluid fertilisers are aware of the vulnerability of nearby groundwater sources so that this can be taken into account when siting storage facilities and drawing up emergency plans. The objective must be to ensure that pollution is prevented and that in the event of a major spillage, fluid fertiliser is not allowed to soak through the soil directly or by way of drains and soakaways in these vulnerable areas.

If you require further more specific information about the sensitivity of your site with respect to the water environment the Environment Agencies are always pleased to offer advice.

The Fertiliser Manufacturers Association also publishes a Code of Practice for the Prevention of Water Pollution from the Storage and Handling of Solid Fertilisers.

* **Environment Agency England**
Environment Agency Wales
Scottish Environment Protection Agency
Environment and Heritage Service
Northern Ireland

April 1998.

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PART 1 - USERS

Fluid Fertilisers can be applied to the field very accurately, thereby avoiding unwanted and potentially damaging applications to hedge bottoms or ditches. As with all nutrient sources including solid fertilisers and organic manures and wastes, care must be taken with their storage, transfer and transportation. Detailed guidelines are given but attention is drawn to six main points: -

- **Fixed or mobile stores must be sited with care,**
- **Any spillage which occurs must be properly dealt with to avoid pollution,**
- **Stores, valves and pipework must be properly maintained and inspected and records kept,**
- **Bowers or tankers must have their hatches/lids securely closed before being moved,**
- **Valves must be secured so that they can only be opened by authorised personnel,**
- **Have a spillage contingency plan. Know what to do in an emergency.**

1.1 Introduction

1.1.1 This 'Code of Practice for the Prevention of Water Pollution from the Storage and Handling of Fluid Fertilisers, (Part 1, [Users])' (referred to herein as the 'Code') is a *practical* guide to help users avoid loss or spillage of Fluid fertiliser which could cause water pollution.

1.1.2 This Code is without prejudice to any legal obligations safety requirements or other codes of practice.

1.1.3, Following this Code is not a defence against a charge of causing pollution, although it should reduce the chance of pollution occurring.

1.1.4 Users should ensure that they carry adequate insurance cover against liability for pollution.

1.1.5 This Code does not cover guidance for the appropriate use of Fluid Fertilisers and reference should be made to the Codes of Good Agricultural Practice (MAFF - England and Wales), Prevention of Environmental Pollution from Agricultural Activities (SOAFED - Scotland), and The Countryside Management Code (DANI -Northern Ireland), and also to published fertiliser recommendations. To obtain further advice with respect to the proper use of fluid fertilisers contact a professionally qualified adviser, as registered under FACTS (Fertiliser Advisers Certification and Training Scheme) (see Appendix 1).

1.1.6 This Code has been drawn up in consultation with the

Environment Agency England, the Environment Agency Wales, the Scottish Environment Protection Agency and Environment and Heritage Service Northern Ireland. (The Environment Agencies) (see Appendix 1)

1.2 Definitions

For the purposes of this Code, the term:—

1.2.1 **‘User’** shall mean farmers, growers, application contractors and all those organisations or individuals responsible for the end-use of Fluid fertilisers. Delivery and transportation on the public highway is covered in Part 2 of this Code.

1.2.2 **‘Fluid Fertiliser’** shall include all solution fertilisers (otherwise known as liquid fertilisers), suspension fertilisers and aqueous ammonia solutions not exceeding 34% ammonia. Organic—based fluids containing plant nutrients, such as farm slurries, sewage sludges or other effluents, are expressly excluded.

1.2.3 **‘Watercourse’** shall include all surface waters whether coastal waters, estuaries, lakes, ponds, rivers, streams, canals and field ditches (even when dry).

1.2.4 **‘Groundwater’** shall be defined as water which is below the surface of the ground in the saturation zone and in direct contact with the ground and/or water held in underground rock formations (aquifers). For the purposes of this Code it is considered that pollution of Groundwater could result from incidents occurring where such aquifers outcrop at or near the soil surface. or occurring within a minimum of 50 metres of a water abstraction borehole, or where no protection of the underlying water exists e.g. where there are soakaways, swallow holes or quarries.

1.2.5 **‘Major Spillage’** shall refer to a spillage of Fluid Fertiliser which cannot be controlled and/or which involves significant loss of the spillage causing pollution of a Watercourse or of Groundwater.

1.2.6 **‘Supplier’** shall refer to the manufacturer, distributor, merchant, haulier or other organisation or individual who supplies the User with Fluid Fertiliser.

1.3 General Principles

1.3.1 All procedures, equipment and installations should be designed to avoid any spillage of Fluid Fertilisers.

1.3.2 In the event of such spillage, appropriate

to prevent the pollution of Watercourses or Groundwater.

1.3.3 Frequent inspections and regular maintenance should be made of all pipework, valves, tanks, bowsers, lagoons, hard-standing, bunds (if provided) and security systems to minimise the risk of accidental leakage or failure. Records should be kept of this maintenance and inspection

1.4 Siting of Fluid Fertiliser Storage Tanks, Lagoons and Bowsers

1.4.1 Suitable siting of storage tanks, lagoons and bowsers is critical to avoiding potential pollution of Watercourses or Groundwater in the event of a spillage.

1.4.2 Good, well-constructed vehicular access for large delivery and off-take vehicles is essential.

1.4.3 It should not be assumed that existing sites are correctly sited, even if no pollution problems have arisen. Ideally no site should extend to within 10 metres of a Watercourse. This requirement should certainly apply to new sites.

1.4.4 Existing sites and preferably all new sites should be in areas where groundwater vulnerability is low and not in highly sensitive areas. Sensitive areas are in the proximity of boreholes, wells, springs, aquifer outcrops, soakaways, swallow holes, quarries or within 50 metres of abstraction for potable supply. For further guidance on groundwater protection contact the appropriate Environment Agency, (see Appendix 1).

1.4.5 Where permanent storage tanks are unavoidably sited in a high-risk position, serious consideration should be given to the provision of appropriate bunding, (see Appendix 1).

1.4.6 Consideration should be given as to where any spilled Fluid Fertiliser would flow in the event of an accident during loading or unloading, or if the store were to develop a leak or be vandalised. The total potential spillage must be capable of containment in an un-drained area. Where such areas are on the outcrop of an aquifer, the permeability of the un-drained area and need to protect Groundwater must be considered.

1.4.7 The potential route of any escaping Fluid Fertiliser should be channeled to a suitable un—drained area by means of permanent soil banks and/or kerbs where necessary. Care should be taken to prevent any spilled Fluid Fertiliser from running down a road and thus into drains. Soil is a better and more absorbent temporary barrier than sand.

1.4.8 Care needs to be taken in every case with the appropriate siting of mobile tankers or bowsers. Mobile tanks and bowsers should be sited so as to minimise the risk of any spillage of Fluid Fertiliser entering a Watercourse or Groundwater, even though such siting may be only temporary.

1.4.9 No Fluid Fertiliser shall be received into bowsers supported on parking legs unless these legs are resting on made—up roadway or concrete of known and adequate thickness, or are resting on a support of suitable size and thickness, to support the loaded weight of the bowser without it sinking into the ground and becoming unstable.

1.4.10 The farmer has a responsibility to consider and advise on the correct siting of any tankers or bowsers, including those supplied by a haulier or application contractor. The farmer should include consideration of the location of surface water drains and land drains. Farmers must take care to ensure that when laden tankers or bowsers are being moved on their property they are not driven so close to a Watercourse or causeway that the bank is unable to support the weight.

1.4.11 Fluid Fertiliser stores should be sited away from public access to minimise the risk of vandalism, with the outlet(s) securely locked or inoperable when unattended. The stores should be made as secure as feasible, with consideration given to deterrent lighting.

1.5 Fluid Fertiliser Storage

1.5.1 Fluid Fertilisers may be stored in suitable above-ground tanks. They should not be stored in unsupported flexible containers.

1.5.2 Permanently sited tanks and their fittings should be fit for the purpose, should be of a suitable material resistant to corrosion and should be sited on a base or footing designed to support the weight of the full store.

1.5.3 The outside of steel tanks should be protected against corrosion with a suitable paint.

1.5.4 Mobile tanks or bowsers should be fit for the purpose and should be of a suitable material resistant to corrosion. All hatches should have covers which provide a watertight seal when closed. No laden mobile tank or bowser should be moved unless all hatches, lids and valves are securely closed.

1.5.5 All outlet/inlet valve(s) and sight tubes/gauges should be positioned or protected so that they are not vulnerable to vandalism or accidental damage, particularly from passing vehicles. All valves should be inoperable when unattended, and on bunded tanks should be wholly within the bund. Sight tube valves should be fitted, and closed when not in use.

1.5.6 With the exception of aqueous ammonia, Fluid Fertilisers may be stored in lagoons so long as they are designed and constructed with impermeable walls and floor, (see Appendix 1, CIRIA report).

1.5.7 Users should conduct a thorough, formal and recorded check of all tanks, bowsers and lagoons at least once a year, in addition to normal everyday observation, for damage or corrosion which might give rise to leakage or failure. Appropriate measures should be taken to repair the storage if necessary and records kept of all inspections and repairs. Advice on inspection and maintenance should be sought from the Supplier of the Fluid Fertiliser.

1.6 Deliveries and Transfers

1.6.1 A tanker driver delivering Fluid Fertiliser, who considers the condition of the store, valves, pipework, access or siting inappropriate, maybe permitted to refuse to off-load the delivery.

1.6.2 The User should be satisfied that the Supplier of Fluid Fertiliser is operating in with this Code, Part 2, [Suppliers], and has drawn up adequate emergency procedures for use in the event of a Major Spillage occurring during Fluid Fertiliser transfer onto farm. The Users should ensure that they are able to assist as necessary to contain any spillage and to avoid pollution of Watercourses or Groundwater (see Appendices 3 and 4).

1.6.3 The User should draw up procedures for use in the event of a Major Spillage occurring on farm at times other than during delivery by the Supplier. These procedures (see Appendices 3 and 4), may involve the assistance of the Supplier and the Environment Agencies.

1.6.4 The User should ensure that, if Fluid Fertiliser is to be delivered into a mobile bowser or road tanker supported on parking legs, these legs are resting on a made-up roadway or concrete of known and adequate thickness, or on a support of suitable size and thickness, to carry the loaded weight of the bowser without it sinking into the ground and becoming unstable.

1.6.5 All hatches, lids and valves should be securely closed before tankers or bowsers are moved, and valves should be inoperable or locked when unattended.

1.6.6 Tanks or bowsers should not be filled to capacity, so as to allow for the expansion of contents in warm weather

1.6.7 While ideally Users should be present during deliveries, they should ensure that, in their absence, the delivery tanker driver is able to operate all relevant valves so that they can nevertheless remain in—operable before and after delivery.

1.6.8 The person undertaking any transfer of Fluid Fertiliser must be aware of all relevant procedures and be capable of taking appropriate action in the event of an incident. They shall remain present at all times during the transfer of fluid fertiliser.

Part 2 - Suppliers

2.1 Introduction

2.1.1 This 'Code of Practice for the Prevention of Water Pollution from the Storage and Handling of Fluid Fertilisers, (Part 2

[Suppliers])' [here-inafter referred to as the 'Code'] is a practical guide for the prevention of water pollution to help all those involved with Fluid Fertilisers.

2.1.2 This Code is without prejudice to any other legal obligations, safety requirements or codes of practice.

2.1.3 Following this Code is not a defence against a charge of causing pollution, although it should reduce the chance of pollution occurring.

2.1.4 Suppliers should ensure that they carry adequate insurance cover against liability for pollution. Special policies which cover Environmental Impairment Liability are available, (for example through the Chemical Industries Association: the 'CIA Environmental Impairment Liability Insurance Facility', CEILIF).

2.1.5 This Code does not cover guidance for the appropriate use of Fluid Fertilisers, and reference should be made to the Codes of Good Agricultural Practice (MAFF - England and Wales), Prevention of Environmental Pollution from Agricultural Activity (SGAEFD - Scotland), and The Countryside Management Code (DANI - Northern Ireland), and also to published fertiliser recommendations (Refs: see Appendix 1).

2.1.6 This Code has been drawn up in consultation with the Environment Agency England, the Environment Agency Wales, the Scottish Environment Protection Agency and the Environment and Heritage Service Northern Ireland.

2.2 Definitions

For the purposes of this Code, the term:—

2.2.1 '**Supplier**' shall be defined as including all manufacturers, importers, distributors, merchants, hauliers and any other organisation or individual who stores or handles Fluid fertilisers, excepting the end—using farmer, grower or application contractor.

2.2.2 '**Fluid Fertiliser**' shall be defined as including all solution fertilisers [otherwise known as liquid fertilisers), suspension fertilisers and aqueous ammonia solutions not exceeding 340/u ammonia. Organic-based fluids containing plant nutrients such as farm slurries, sewage sludges or other effluents are expressly excluded.

2.2.3 '**Watercourses**' shall be defined as including all service waters whether coastal waters, estuaries, lakes, ponds, rivers, streams, canals and field ditches (even when dry).

2.2.4 '**Groundwater**' shall be defined as water which is below the surface of the ground in the saturation zone and in direct contact with the ground and/or water held in underground rock formations (aquifers). For the purposes of this Code it is considered that pollution of Groundwater could result from incidents occurring where such aquifers outcrop at or near the soil surface, or occurring within 50 metres of a water abstraction borehole.

2.2.5 '**Site**' shall be the premises operated by the Supplier for the manufacture and/or storage and/or supply of Fluid Fertilisers.

2.2.6 '**Major Spillage**' shall be defined as a spillage which cannot be controlled and/or which involves significant loss of the spillage causing pollution of a Watercourse or of Groundwater

2.3 General Principles

2.3.1 All procedures and installations shall be designed to avoid the loss of Fluid Fertiliser from primary containment.

2.3.2 In the event of a loss from primary containment occurring on the Site procedures and installations shall be designed to prevent the escape of the fertiliser to the surrounding environment. This containment shall hereinafter be called 'Within-Site Containment' and be described as 'WSC'.

2.3.3 In the (event of a loss of containment occurring off the Site, procedures shall be designed to prevent the pollution of Watercourses or Groundwater.

2.3.4 The Site should be protected from access by unauthorised persons.

2.4 Within Containment, WSC

2.4.1 To provide protection from potential pollution of the surrounding environment it is necessary to contain the occasional spillages that may occur in the storage and transfer of raw materials, intermediates and finished product. To this end, a WSC system should be designed for the collection and recovery of all liquid including rainwater from working surfaces. This would entail collecting all surface water from those areas of the Site used for process, storage, handling and transfer and containing 'in suitable storage' (referred to in this Code as the 'Site-water Storage').

2.4.2 The Site-water Storage shall be of a sufficient capacity to contain all the liquid from events such as exceptional heavy rainfall or failure of storage. If the surface water is channeled to a sump or ditch(es) for pumping to the Site-water Storage, then the capacity of the sump or ditch(es) and the pump shall be adequate for these exceptional events.

2.4.3 Containment ditches and banks supplementary to the WSC may be required to give emergency protection to surrounding land or off-site surface drains or Watercourses. If the Site is under-drained these drains should discharge to the containment ditches. Polluted water from all ditches should be able to be pumped to the Site-water Storage.

2.4.4 Contingency plans should be drawn up to ensure that secondary containment is not jeopardised through the failure of a part of the system, such as a pump.

2.4.5 All working surfaces within the WSC should be constructed to specifications which prevent damage by vehicular traffic, loading shovels or demounted loaded road tankers etc., which could damage the impermeability of the working surface or affect its strength or stability.

2.5 Raw Material and Intermediate Product Storage

2.5.1 Liquid raw materials and intermediates, excluding phosphoric acid and anhydrous ammonia, shall be stored as indicated for finished Fluid Fertilisers, Section 2.6.

2.5.2 Phosphoric acid should be stored in appropriate tank(s), which should be located within a specifically bonded area, the bond being impermeable, appropriately constructed and capable of retaining a volume of either 110% of the volume of the largest tank or 250/n of the total tank volume, whichever is the greater, (see Appendix 1).

2.5.3 Anhydrous ammonia should be stored in appropriate tanks (see Appendix 1).

2.5.4 Solid raw materials should be stored on an impermeable surface within the WSC.

2.6 Fluid Fertiliser Storage. Tank Stores

2.6.1 Bunding of individual or groups of Fluid Fertiliser storage tanks is not required if the tanks are within the WSC. However if individual tanks are bunded, then this bund shall be impermeable, strongly constructed and capable of retaining 110% of the capacity of the tank. If more than one tank is to be included within the bund, then the impermeable bond shall be capable of retaining 110% of the capacity of the largest tank, or 25% of the total capacity of all the tanks, whichever is the greater, (see Appendix 1).

2.6.2 Tanks and fittings should be of a suitable material resistant to corrosion and tanks should be sited on a base or footings designed to support their weight when full.

2.6.3 Valves, pipework and sight tubes should be positioned or protected so that they are not vulnerable to accidental damage, particularly from passing vehicles. On bunded tanks they must be wholly within the bund.

2.6.4 The outside of steel tanks should be protected against corrosion with a suitable paint.

2.6.5 All tanks should be regularly inspected (at least once a year) for damage or corrosion which might give rise to leakage or failure, and appropriate measures taken. All inspections and any remedial actions should be recorded.

2.7 Fluid Fertiliser Storage, Lagoons

2.7.1 Fluid Fertilisers other than aqueous ammonia may be stored in lagoons suitably designed and tested and constructed with impermeable walls and floor, (Ref: Appendix 1, CIRIA Report)

2.7.2 All lagoons should be regularly inspected (at least once a year) for damage or rupture of the liner which could give rise to leakage and appropriate action taken to repair the liner or fittings as necessary. All inspections and any remedial actions should be recorded.

2.7.3 When lagoon liners are replaced or new or replacement lagoons constructed, the opportunity should be taken to include a suitable system of drainage pipes under the primary liner. These drains should discharge into a catchpot/sump outside the lagoon wall which can be emptied to the Site-water Storage. This drainage system will allow sampling to detect leakage and permit any leaked Fluid Fertiliser to be recovered.

2.7.4 If the lagoon is constructed on relatively impermeable clay soil these drains may be laid in the clay under the primary liner but if the lagoon is on free-draining soil then a secondary impermeable membrane should be laid under the drains.

2.7.5 It is preferable for input and output pipework to pass over the lagoon wall rather than through the liner as this reduces the possibility of leakage.

2.7.6 The lagoon should be designed so that, after allowing for rainfall, there is a sufficient freeboard.

2.8 Maintenance and Inspection

2.8.1 A schedule of Maintenance and Inspection Procedures should be drawn up, so that regular checks are made of the integrity of all plant, pipework, storage facilities, roadways, bunding and security systems to minimise the risk of accidental leakage or failure.

2.8.2 Records should be kept of all such Maintenance and Inspection of actions taken

2.9 Distribution

2.9.1 On-Site loading procedures should be established to prevent accidental spillage from valves, pipework or overfilling.

2.9.2 Emergency procedures should be drawn up so that appropriate actions are taken by the Supplier and the road tanker driver in the event of a road traffic or other accident occurring in transit, (see Appendix 3).

2.9.3 Emergency procedures should be drawn up for use in the event of a Major Spillage occurring during Fluid Fertiliser transfer or farm to ensure that appropriate actions are taken to contain the spillage and prevent any pollution of a Watercourse or Groundwater, (see Appendix 3).

2.9.4 Emergency procedures drawn up to minimise any polluting effects of spillage of Fluid Fertiliser in transit or during delivery should include arrangements for reserve tankers to recover polluted waters from Watercourses where possible.

2.9.5 Procedures for the delivery to farm and off-loading of Fluid Fertiliser should be drawn up for the guidance of tanker drivers. These procedures should include instruction that the Fluid Fertiliser be transferred in such a way that spillage which could lead to pollution does not occur, that hatches and valves be securely closed at all times when being moved and that valves be inoperable when unattended.

2.9.6 The tanker driver should be instructed to refuse to offload the Fluid Fertiliser if he considers the storage and/or transfer conditions inappropriate. reference should be made to the Code of Practice for the Prevention of Water Pollution from the Storage and Handling of Fluid Fertilisers (Part 1 [Users]) for guidance on appropriate on-farm storage.

2.9.7 All hatches and valves should be securely closed before tankers are moved and valves of laden tankers or bowsers be inoperable when unattended

2.9.8 The person undertaking any transfer of Fluid Fertiliser must be aware of all relevant procedures and be capable of taking appropriate action in the event of an incident. they shall remain present at all times during the transfer of Fluid Fertiliser.

2.9.9 Tanks or bowsers should not be filled to capacity, so as to allow for the expansion of the contents in warm weather.

2.10 Fertiliser Application Contractors

2.10.1 Procedures should be drawn up for the delivery of Fluid Fertiliser for the use of fertiliser application contractors. As part of these procedures the delivery tanker drivers should be satisfied that the receiving store is in a fit condition, has the necessary spare capacity to receive the load, allowing for expansion of contents and, taking account of any nearby Watercourse is appropriately sited before off-loading, The delivery drivers may refuse delivery if in their opinion the storage and/or transfer conditions are inappropriate. Reference should be made to Guidelines for the Prevention of Water Pollution from the Storage and Handling of Fluid Fertilisers, (Part 1 [Users]).

2.10.2 If Fluid Fertiliser is transferred on farm for use by fertiliser application contractors this is often into mobile bowsers which may be supported on parking legs designed for the purpose

2.10.3 No Fluid Fertiliser should be delivered into bowsers or tankers supported on parking legs unless; these legs are resting on made-up roadway or concrete of known and adequate thickness or are resting on a support of suitable size and thickness, to carry the loaded weight of the bowser without it sinking into ground and becoming unstable.

2.10.4 Emergency procedures should be drawn up as detailed in Section 2.9 above,

2.10.5 All hatches and valves should be securely closed before tankers are moved and valves of laden tankers or bowsers should be inoperable when unattended.

2.10.6 The person undertaking any delivery or transfer of Fluid Fertiliser must be aware of all relevant procedures and be capable of taking appropriate action in the event of an incident. They shall remain present at all times during transfer of Fluid Fertiliser

2.11 Incident Management and Reporting

2.11.1 Having drawn up the procedures required for the management of spillage resulting from a road traffic or other accident in transit, or management of a Major Spillage on farm, the Supplier should ensure that all the necessary and agreed resources are available. The procedures should include the appointment of a responsible person to co-ordinate the management and reporting of the incident.

2.11.2 The Supplier should ensure that records are kept of all reported incidents involving spillage resulting from a road traffic or other accident in transit and from any Major Spillages occurring on farm.

2.11.3 Report any incident of environmental pollution by contacting the appropriate Environment Agency immediately. (For emergency telephone numbers see Appendix 1).

2.12 Farm User Support

The Supplier should provide advice and assistance to their end-user customers and contractors to encourage an awareness of the importance of careful storage, handling and use of Fluid Fertilisers with respect to the prevention of pollution. Attention should be drawn to the 'Code of Practice for the Prevention of Water Pollution from the Storage and Handling of Fluid Fertilisers, (Part 1 [Users]).

2.13 Training

Suppliers should ensure that all employees and subcontractors involved in the manufacture, storage, sale, distribution and application of Fluid Fertilisers are adequately informed about the appropriate procedures designed to avoid the pollution of Watercourses and Groundwater.

Appendix 1

Sources of Information

Code of Good Agricultural Practice for the Protection of Water, MAFF/WOAD, 1991, (Rev) 1998 PB 0587

Code of Good Agricultural Practice for the Protection of Air, MAFF/WOAD, 1992, (Rev) 1998 PB 0818

Code of Good Agricultural Practice for the Protection of Soil, MAFF/WOAD, 1993, (Rev) 1998 PB 0617

Prevention of Environmental Pollution from Agricultural Activity, Scottish Office, (SOAEFD) 1997

Countryside Management Code, 'Prevention of Pollution of Water, No.9 Fertilisers, DANI, 1991, (Northern Ireland), Dd 088158

Fertiliser Recommendations for Agricultural and Horticultural Crops, MAFF Reference Book 209 (England, Wales and Northern Ireland) (6th Edition), 1994, The Stationery Office, ISBN 0 11 242935 1

SAC Technical Notes: Fertiliser Series Only available to SAC Subscribers (Scotland)

Fertiliser Recommendations (Northern Ireland), DANI, 1992, No 187

CIRIA Report No: 126, Farm Waste Storage — Guidelines for Construction. P A Mason, ISBN 0 60173526

Code of Practice for Design of Concrete Structures for Retaining Aqueous Liquids, 858007,1987.851,2 Park St London, W1A 2BS

Guidance on the Bunding of Bulk Chemical Storage Vessels, HSE Special Inspector Reports, No 39, Bugler et al, HSE Information Centre, Broad Lane, Sheffield S3 7H0

Policy and Practice for the Protection of Groundwater, The Stationery Office: ISBN 01885822x) 1992, with accompanying Groundwater Vulnerability maps

Recommendations for Safe Storage and Handling of Wet Process Phosphoric Acid, (Phosphoric Acid Produced from Sulphuric Acid), 1990, EFMA, Avenue E Van Nieuwenhuysse 4, Ste 7, B-1160, Brussels

Storage of Anhydrous Ammonia Under Pressure in the United Kingdom, HS/G 30, The Stationery Office

Hazardous Properties of Ammonia, 1990, EFMA, Avenue E. Van Nieuwenhuysse 4, Bte 7, B—li 60, Brussels

Code of Practice For the Prevention of Water Pollution From the Storage and Handling of Solid Fertilisers, FMA, 1998

Guidance for the Compilation of Safety Data Sheets for Fertilizer Materials 1996 EFMA

THE FACTS OFFICE

34 St John Street
Ashbourne
Derbyshire DES 1GH
Tel: 01335 343945

THE ENVIRONMENT AGENCIES

Environment Agency England - Free emergency telephone number: 0800 807060

Head Office
Rivers House
Waterside Drive
Aztec West
Almondsbury
Bristol BS10 4UD
Tel: 01454 624400

Anglian
Kingfisher House
Goldhay Way
Orton Goldhay
Peterborough
PE2 SZR
Tel: 01733 371811

North West
Richard Fairclough House
Knutsford Road
Warrington WA4 1 HG
Tel: 01925 653999

South West
Manley House
Kestrel Way
Exeter EX2 7L0
Tel: 01392 444000

North East
Rivers House
21 Park Square South
Leeds LS1 206
Tel: 01132440191

Southern
Guildbourne House
Chatsworth Road
Worthing
West Sussex BN11
Tel: 01903 820692

Midlands
Sapphire East
550 Streetsbrook Road
Solihull
West Midlands B91 1OT
Tel: 01217 112324

Thames
Kings Meadow House
Kings Meadow Road
Reading RG1 8DQ
Tel: 01189 535000

Environment Agency Wales Asiantaeth yr Amgylchedd

Free emergency telephone number: 0800 807060

Rivers House
St Mellons Business Park
St Mellons
Cardiff CF3 0LT
Tel: 01222 770088

Plas-yr-Afon
Parc Busnes Llaneilwr
Heol Fortren
Caerdydd CF3 0LT

Scottish Environment Protection Agency

Free emergency telephone number: 0345 732271

Head Office
Erskine Court
The Castle Business Park
Stirling FK9 4TR
Tel: 01786457700

East
Clearwater House
Heriot-Watt Research Park
Avenue North, Riccarton
Edinburgh EH144AP
Tel: 01314 497296

North
Graesser House
Fodderty Way
Dingwall Business Park
Dingwall IV15 9XB
Tel: 01349 862021

West
5 Redwood Crescent
Peel Park
East Kilbride 674 5PP
Tel: 01355 574200

Environment and Heritage Service Northern Ireland

Free emergency telephone number: 01232 757414

Dept of the Environment for NI
Calvert House
23 Castle Place
Belfast BT1 1FY

Tel: 01232 254868

Appendix 2 - Regulations

Primary Legislation

Agriculture Act 1970
Consumer Protection Act 1987
Control of Pollution Act 1974, as amended
Environmental Protection Act 1990
Water Resources Act (England and Wales) 1991
Water Act (Northern Ireland)*

*In revision

Regulations

Control of Substances Hazardous to Health
Regulations 1994. S I No 437

Environmental Protection (Prescribed Processes &
Substances) Regulations 1991 as amended, S I No
472

The Carriage of Dangerous Goods (Classification,
Packaging and Labelling) and
Use of Transportable Pressure Receptacles
Regulations, 1996, S I No 2092

The Carriage of Dangerous Goods by Road
Regulations, 1996, S I No 2095

The Fertilisers Regulations 1991, as amended, S I
No 2197

The Transport of Dangerous Goods (Safety
Advisers) Regulations 1999 S I No 257

[Copies of all the above can be obtained
from The Stationery Office](#)

Appendix 3 - Emergency Procedures

EXAMPLES:

for tanker drivers and users - AQUEOUS AMMONIA

In the event of an accident involving a laden tanker or bowser which results in a MAJOR spillage of aqueous ammonia (i.e. one in which the spillage cannot be controlled and/or which involves significant spillage to Watercourse or potentially to Groundwater), the following steps must be taken:

1. Immediately raise the alarm in order to notify the Police and Fire Brigade of the spillage. (Some thought must be given to the method of raising the alarm to avoid leaving the site unattended). Use CB, in-cab telephone or get passers-by to telephone on your behalf, taking care to give them the correct information to pass on to the Emergency Services. Only leave the site of the spillage to telephone provided the area can be made reasonably safe,

On notifying Police and Fire Brigade, give the:

- location of the spillage,
- type of material spilled, stressing it is
- Aqueous Ammonia, not Anhydrous Ammonia,
- approximate amount of material involved,
- emergency number on the Hazchem Label 2P 2672,
- emergency telephone No. of supplier of the Aqueous Ammonia.

Tel No.....

2. Ask the Police/Fire Brigade to notify the appropriate Environment Agency:

Environment Agency England, Environment Agency Wales, Scottish Environment Protection Agency or Environment and Heritage Service Northern Ireland.

Tel No.....

3. Wear protective clothing and stay up-wind. Remain at (or return to) the location until the Emergency Services arrive. Keep members of the public away from the area.

4. As soon as possible after alerting the Emergency Services notify your own employer and the supplier of the Aqueous Ammonia, if not already informed.

5. Ensure that no oxy-acetylene cutting equipment is used on or near the tanker or bowser. This also applies to tankers or bowsers which have been emptied of Aqueous Ammonia but not yet washed out.

6. Discuss with the Emergency Services/ Environment Agencies the possible need to protect or dam any nearby Watercourse to ensure containment of the spillage and any wash-down water used.

In the event of a MINOR spillage such as a leaking hose or valve the procedure should be as follows:

- respirators and gloves must be worn,
- stop the leak,
- douse liberally with water, without run-off to Watercourse,
- effect repair if possible or inform employer/supplier
- inform the farmer of the occurrence.

for tanker drivers and users -

FLUID FERTILISERS, EXCLUDING AQUEOUS AMMONIA.

In the event of an incident involving a laden tanker or bowser which results in a MAJOR spillage of Fluid Fertiliser other than aqueous ammonia (i.e. one in which the spillage is significant and/or cannot be contained), the following steps must be taken:

On the public highway:

1. If the spillage occurs on a public highway, perhaps as the result of a road traffic accident, immediately raise the alarm in order to notify the Police and Fire Brigade of the spillage. (Some thought must be given to the method of raising the alarm to avoid leaving the site unattended). Use CB, in-cab telephone or get passers-by to telephone on your behalf, taking care to give them the correct information to pass on to the Emergency Services. Only leave the site of the spillage to telephone provided the area can be made reasonably safe.

When notifying Police and Fire Brigade, give the: location of the spillage, type of material spilled, approximate quantity of material involved, emergency Hazchem description, i.e.: 1Z Non-Hazardous.

2. Ask the Police/Fire Brigade to notify the appropriate Environment Agency:

- Environment Agency England, Environment
- Agency Wales, Scottish Environment
- Protection Agency or Environment and
- Heritage Service Northern Ireland.

Tel No.....

3. Remain at (or return to) the location until the Emergency Services arrive.

4. As soon as possible after alerting the Emergency Services notify your own employer and the supplier of the fertiliser.

Tel No.....

5. Discuss with the Emergency Services/ Environment Agencies the possible need to protect or dam any nearby Watercourse to ensure containment of the spillage/wash down water

On the farmers property,
(tanker, bowser or storage tank):

Immediately contact the supplier of the fertiliser, the farmer and your employer and request that the appropriate Environment Agency be informed. Remain on site until released by the fertiliser supplier/your employer Take appropriate action to minimise the spillage and to prevent the pollution of Watercourses/Groundwater, perhaps using earth barriers/dams.

In the event of a MINOR spillage such as a leaking hose or valve the procedure should be as follows:

wearing goggles and gloves, stop the leak, where practicable contain the spillage and mop it up, effect repair if possible or inform employer/supplier

Tel
No.....

...

Appendix 4 - Product Safety Data Sheets

Sample Product Safety Data sheets for Fluid Fertilisers



PSDS GROUP 9 PRODUCT

FMA PRODUCT SAFETY DATA SHEET - GROUP 9

INTRODUCTION

This Product Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Fertiliser Manufacturers Association. It does not apply to any other product of similar name or nature. The products covered will be clearly identified by the name of the marketer and/or manufacturer on the associated labels and/or documents. Qualifying product will be marked as follows:



1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

1.1 Identification of the Product

Products in Group 9 are fluid straight nitrogen fertilisers in the form of aqueous solutions or suspensions.

1.2 Company

See details below

2. COMPOSITION/INFORMATION ON INGREDIENTS

These products may contain some or all of the following ingredients:- ammonium nitrate, urea, ammonium sulphate, other ammonium salts, micro-nutrients.

3. HAZARDS IDENTIFICATION

3.1 Human Health

Products are of a low toxicity but prolonged skin or eye contact may cause some irritation.

Ingestion: Small quantities are unlikely to cause toxic effects.

Large quantities may give rise to gastro-intestinal disorders and in extreme cases (particularly in children) formation of methaemoglobin ("blue baby" syndrome) and cyanosis (indicated by blueness around the mouth) may occur. No adverse long term effects are known.

Inhalation: Low toxicity spray but high concentration of air-borne material may cause irritation of the nose and upper respiratory tract with symptoms such as sore throat and coughing

Molten material: Will cause burns and inhalation of decomposition gases (eg in a fire) may cause serious delayed lung effects.

3.2 Environment

Ammonium nitrate is a nitrogen fertilizer. Heavy spillage may cause adverse environmental impact such as eutrophication in confined surface waters or nitrate contamination. See Section 12.

4. FIRST AID MEASURES

Product

Skin contact: wash the affected area with soap and water

Eye contact: irrigate eyes with copious amounts of eyewash solution or water for at least 10 minutes. Obtain medical advice if symptoms persist.

Ingestion: **do not** induce vomiting. Give milk or water to drink. Obtain medical attention if more than small quantities have been swallowed.

Inhalation: remove from source of exposure to spray. Keep warm and at rest. Obtain medical advice if symptoms persist.

Fire and Thermal Decomposition Products

Skin contact: wash areas in contact with molten material. Wash copiously with cold water. Seek medical advice.

Inhalation: remove from source of exposure to fumes. Keep warm and at rest.

5. FIRE-FIGHTING MEASURES

When the fertiliser **is not** directly involved in the fire use the best means available to control the fire.

When the fertiliser **is** involved:-

1. Avoid breathing the fumes. Wherever possible wear an approved breathing mask when fighting a fire or when fumes are being emitted.
2. Call the fire brigade.
3. Use plenty of water.
4. Open doors and windows to give maximum ventilation.
6. **Do not** allow the fertiliser or water containing the fertiliser to run into drains.

Note also first aid precautions (4).

6. ACCIDENTAL RELEASE MEASURES

Wash down spillage promptly and avoid ingestion by livestock. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination

7. HANDLING AND STORAGE

7.1 Handling: Avoid excessive generation of spray during transport of product. Take special care with absorbent materials such as clothing and insulating material contaminated with the fluid which, when dry, may exhibit incendiary properties.

7.2 Storage: Store in vessels fit for the purpose. Locate away from sources of heat, fire or explosion. Keep away from combustible materials and chemical substances taking particular care on farms to ensure that it is not stored near hay, grain, diesel, etc. Ensure high standard of house-keeping in the storage areas. Tank or storage areas should be appropriately sited to prevent the contamination of drains or watercourses.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Occupational exposure limits

No specific official limits

8.2 Precautionary and engineering measures

Avoid high spray concentration and provide ventilation where necessary.

8.3 Personal Protection

Wear suitable gloves when handling the product over long periods. Avoid contamination of absorbent clothing. After handling product, wash hands and observe good hygiene practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Aqueous solution (clear) or suspension which will crystallise out at temperatures below zero.
Odour	Odourless or slight ammoniacal smell
pH	> 4.5.
Density	Depends on concentration. Normally between 1200 and 1400kg/m ³

10. STABILITY AND REACTIVITY

Stable under normal storage and handling conditions. Liberates ammonia when in contact with alkalis eg Caustic Soda, Soda Ash.

The solution (and solids in solution) are not combustible; water evaporates and ammonia is given off when strongly heated. After complete evaporation a solid or molten mass may form which decomposes on further heating, giving off toxic fumes containing ammonia and oxides of nitrogen. The dried or molten mass may exhibit oxidising properties.

There is no explosive risk under normal handling situations but in pumping operations, if allowed to run dry, may possibly exhibit explosive properties.

Do not weld or apply heat to equipment or plant which may have contained the fertiliser without first washing thoroughly to remove all fertiliser.

11. TOXICOLOGICAL INFORMATION

11.1 General

See Section 3.1.

11.2 Toxicity Data

LD50 (oral, rat) > 2000mg/kg
May cause methaemoglobinemia See Section 3.1.

12. ECOLOGICAL INFORMATION

12.1 Mobility

The nitrate ion is mobile. The ammonium ion is adsorbed by soil.

12.2 Persistence/Degradability

The nitrate ion is the predominant form of plant nutrition. It follows the natural nitrification/denitrification cycle to give nitrogen.

12.3 Bio-accumulation

The product does not show any bio-accumulation phenomena.

12.4 Ecotoxicity

Low toxicity to aquatic life. TLM 96 between 10-100ppm

13. DISPOSAL CONSIDERATIONS

Depending on the degree of contamination, dispose of by use on farm, by spraying thinly on open ground or to an authorised waste facility. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination.

14. TRANSPORT INFORMATION

14.1 UN classification

Not classified i e considered non-hazardous material according to the UN Orange Book and international transport codes e g RID (rail), ADR (road) and IMDG (sea).

15. REGULATORY INFORMATION

15.1 EC Directives

76/116/EEC (Relating to fertilisers)

15.2 National Regulations

The Fertilisers Regulations 1991 and subsequent amendments.

16. OTHER INFORMATION

This safety data sheet provides health and safety information. The product is to be used in applications consistent with best farming practice. Individuals handling this product should be informed under COSHH of the recommended safety precautions and should have access to this information. The product information in this data sheet is to the best of the FMA's knowledge correct as at the date of publication.

Neither the FMA nor the Manufacturer, UKASTA or Supplier accepts liability for any loss or damage (other than that arising from death or personal injury caused by negligence if proved) resulting from reliance on this information. Further information on individual products covered by this safety data sheet may be obtained from the Supplier or the Company whose name, address and telephone number will be found on the fertiliser container



**PSDS GROUP 10 PRODUCT
FMA PRODUCT SAFETY DATA SHEET - GROUP 10**

INTRODUCTION

This Product Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Fertiliser Manufacturers Association. It does not apply to any other product of similar name or nature. The products covered will be clearly identified by the name of the marketer and/or manufacturer on the associated labels and/or documents. Qualifying product will be marked as follows:



1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

1.1 Identification of the Product

Products in Group 10 are fluid compound fertilisers (NPK, NP, NK) in the form of aqueous solutions or suspensions.

1.2 Company

See details below

2. COMPOSITION/INFORMATION ON INGREDIENTS

These products may contain some or all of the following ingredients:- ammonium nitrate, urea, ammonium sulphate, ammonium phosphate, potassium chloride (muriate of potash), potassium phosphate, potassium sulphate, triple superphosphate, inert suspending agents such as bentonite or atapulgit clay, secondary nutrients, micro-nutrients and complexing agents.

3. HAZARDS IDENTIFICATION

3.1 Human Health

Products are of a low toxicity but prolonged skin or eye contact may cause some irritation.

Ingestion: Small quantities are unlikely to cause toxic effects.

Inhalation: Low toxicity spray but high concentration of air-borne material may cause irritation of the nose and upper respiratory tract with symptoms such as sore throat and coughing

Molten material: Will cause burns and inhalation of decomposition gases (eg in a fire) may cause serious delayed lung effects.

3.2 Environment

Heavy spillage may cause adverse environmental impact such as eutrophication in confined surface waters or nitrate contamination. See Section 12.

4. FIRST AID MEASURES

Product

Skin contact: wash the affected area with soap and water

Eye contact: irrigate eyes with copious amounts of eyewash solution or water for at least 10 minutes. Obtain medical advice if symptoms persist.

Ingestion: **do not** induce vomiting. Give milk or water to drink. Obtain medical attention if more than small quantities have been swallowed.

Inhalation: remove from source of exposure to spray. Keep warm and at rest. Obtain medical advice if symptoms persist.

Fire and Thermal Decomposition Products

Skin contact: wash areas in contact with molten material. Wash copiously with cold water. Seek medical advice.

Inhalation: remove from source of exposure to fumes. Keep warm and at rest.

5. FIRE-FIGHTING MEASURES

When the fertiliser **is not** directly involved in the fire use the best means available to control the fire.

When the fertiliser **is** involved:-

1. Avoid breathing the fumes. Wherever possible wear an approved breathing mask when fighting a fire or when fumes are being emitted.
2. Call the fire brigade.
3. Use plenty of water.
4. Open doors and windows to give maximum ventilation.
5. **Do not** allow the fertiliser or water containing the fertiliser to run into drains.

Note also first aid precautions (4).

7. ACCIDENTAL RELEASE MEASURES

Wash down spillage promptly and avoid ingestion by livestock. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination

7. HANDLING AND STORAGE

7.1 Handling: Avoid excessive generation of spray during transport of product. Take special care with absorbent materials such as clothing and insulating material contaminated with the fluid which, when dry, may exhibit incendiary properties.

7.3 Storage: Store in vessels fit for the purpose. Locate away from sources of heat, fire or explosion. Keep away from combustible materials and chemical substances taking particular care on farms to ensure that it is not stored near hay, grain, diesel, etc. Ensure high standard of house-keeping in the storage areas. Tank or storage areas should be appropriately sited to prevent the contamination of drains or watercourses.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Occupational exposure limits

No specific official limits

8.2 Precautionary and engineering measures

Avoid high spray concentration and provide ventilation where necessary.

8.3 Personal Protection

Wear suitable gloves when handling the product over long periods. Avoid contamination of absorbent clothing. After handling product, wash hands and observe good hygiene practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Aqueous solution (clear) or suspension which will crystallize out at temperatures below zero.
Odour	Odourless or slight ammoniacal smell
pH	> 4.5.
Density	Depends on concentration. Normally between 1200 and 1400kg/m ³

10. STABILITY AND REACTIVITY

Stable under normal storage and handling conditions. Liberates ammonia when in contact with alkalies eg Caustic Soda, Soda Ash.

The solution (and solids in solution) do not support combustion and may act as a fire retardant. When strongly heated water evaporates and ammonia is given off. After complete evaporation a solid or molten mass may form which decomposes on further heating, giving off toxic fumes containing ammonia, hydrogen chloride, ammonium chloride and chlorine and oxides of nitrogen if ammonium nitrate is present.

There is no explosive risk under normal handling situations but in pumping operations, if allowed to run dry, may possibly exhibit explosive properties.

Do not weld or apply heat to equipment or plant which may have contained the fertiliser without first washing thoroughly to remove all fertiliser.

11. TOXICOLOGICAL INFORMATION

11.1 General

See Section 3.1.

11.3 Toxicity Data

Product toxicity will depend on the composition.

Ammonium nitrate:

LD50 (oral, rat) > 2000mg/kg
May cause methaemoglobinæmia

Ammonium phosphate

LD50 (oral, rat) > 2000mg/kg

Potassium chloride or sulphate:

LD50 (oral, rat) > 2000mg/kg

See Section 3.1.

12. ECOLOGICAL INFORMATION

12.1 Mobility

The nitrate ion is mobile. The ammonium ion is adsorbed by soil.

12.2 Persistence/Degradability

The nitrate ion is mobile; the ammonium ion is adsorbed by soil particles. Phosphates whether water or citrate soluble, are translocated in the soil over very short distances and are then immobilised. The dissolved potassium ion in the soil solution is adsorbed by clay minerals; where these are absent in light soils, part of the potassium may be leached.

12.3 Bio-accumulation

The product does not show any bio-accumulation phenomena.

12.4 Ecotoxicity

Low toxicity to aquatic life.

13. DISPOSAL CONSIDERATIONS

Depending on the degree of contamination, dispose of by use on farm, by spraying thinly on open ground or to an authorised waste facility. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination.

14. TRANSPORT INFORMATION

14.1 UN classification

Not classified i e considered non-hazardous material according to the UN Orange Book and international transport codes e g RID (rail), ADR (road) and IMDG (sea).

15. REGULATORY INFORMATION

15.1 EC Directives

76/116/EEC (Relating to fertilisers)

15.2 National Regulations

The Fertilisers Regulations 1991 and subsequent amendments.

16. OTHER INFORMATION

This safety data sheet provides health and safety information. The product is to be used in applications consistent with best farming practice. Individuals handling this product should be informed under COSHH of the recommended safety precautions and should have access to this information. The product information in this data sheet is to the best of the FMA's knowledge correct as at the date of publication.

Neither the FMA nor the Manufacturer, UKASTA or Supplier accepts liability for any loss or damage (other than that arising from death or personal injury caused by negligence if proved) resulting from reliance on this information. Further information on individual products covered by this safety data sheet may be obtained from the Supplier or the Company whose name, address and telephone number will be found on the fertiliser container

Aqueous Ammonia

Form SN6

<p>1. Company Hydro Agri (UK) Ltd Immingham Dock Immingham North East Lincolnshire DN40 2NS Tel 01469 554762 Fax 01469 571603</p> <p>In Emergency phone Hydro Agri (24 hours)01469 554600</p>	<p>2. Product AQUEOUS AMMONIA (not more than 35%NH₃) Ammonium Hydroxide Solution NH₄OH</p> <p>UN No 2672 Cas Registry No 1336-21-6 EINECS Reference 215-647-6</p>
<p>3. Composition A solution of ammonia gas in water less than 35% NH₃. Causes burns. Irritating to respiratory system.</p>	
<p>4. Hazards Identification Corrosive. Corrosive liquid - can cause skin burns and severe damage to the eyes. May be absorbed into the body by ingestion and inhalation. Vapour causes strong irritation to the eyes and respiratory tract.</p>	
<p>5. First Aid Measures <u>INHALATION</u> If a person breathes in large amounts, move to fresh air at once. Keep warm. Obtain immediate medical attention.</p> <p><u>SKIN</u> Immediately flush the contaminated skin with water. If the chemical penetrates through clothing, immediately remove the clothing and flush the skin with water. Obtain immediate medical attention.</p> <p><u>EYES</u> Immediately flush with large amounts of water. Get medical attention at once.</p> <p><u>INGESTION</u> Give large quantities of water. Do not attempt to induce vomiting. Get medical attention at once.</p>	

6. Fire Fighting Measures

Cool container with water. If the container is involved in a fire, pressure build up and rupture may occur, releasing large quantities of ammonia gas. Ammonia gas is flammable but is difficult to ignite (Explosive limits in air 16-25%; auto ignition temperature 650°C). When fighting fire, the use of full protective clothing and CABA is indicated. Do not allow water containing ammonia solution to enter drains or water courses as it is extremely toxic to the aquatic environment.

7. Accidental Release

SMALL RELEASES Absorb with sand or other inert absorbent materials for disposal in drums. Wash away with plenty of water. Clear vapour by ventilation indoors or by use of water fog sprays outdoors.

MAJOR RELEASES Full protective clothing and CABA are required to be worn. Try to dam and contain spillage by earth or sandbags to allow for recovery by pump to tanker barrel, drums or other receptacles.

8. Handling and Storage

Store separately from acids. Keep cool. If small quantities are stored indoors, ensure adequate ventilation is available.

The design and construction of handling and storing aqueous ammonia in bulk is a matter for competent specialist equipment for engineers. Tanks should be vented through appropriate scrubbing systems to minimise release of ammonia gas to atmosphere due to increasing temperatures or during transfer of ammonia solution to the tank.

9. Exposure Control/Personal Protection

Keep containers tightly sealed to prevent spillage of liquid or escape of gas. Methods of loading and usage must be designed to prevent exposure to the material. Compressed air breathing apparatus must be available during loading/unloading operations and operators should be trained in its use in the event of an emergency

10. Physical and Chemical Properties

Aqueous ammonia is supplied as a clear colourless liquid at or close to its boiling point. The containers could be under slight pressure. The vapour has a characteristic strong choking odour. It is a strong base which reacts violently with acids, generating heat. Boiling Point, depends on NH₃ content 25% = 40°C 35% = 20°C. Melting Point - 50°C for 25% NH₃ to -100°C for 35% NH₃. Completely miscible with water and has an sg @ 20°C of 0.88 for 35% NH₃.

<p>11. Stability and Reactivity Aqueous ammonia is a strong base which will react violently with acids. It is corrosive towards several metals including aluminium, copper, zinc, cadmium and all their alloys. It reacts with halogens to give products which are unstable and prone to detonation. With gold, silver and mercury, compounds are formed which are sensitive to mechanical shock. As the product is volatile, avoid high temperatures which will lead to gas evolution.</p>
<p>12. Toxicological Information OES 25ppm (8hr TWA Ref. period) for NH₃. OES 35ppm (10min Ref. period) OES - Occupational Exposure Standards, taken from HSE Publication EH40. Ammonia gas inhalation 100-700ppm, irritant. Concentrations in excess of 1000ppm may be quickly fatal (Ref. Code of Practice for the storage of Anhydrous ammonia under pressure in the UK, HSG30).</p>
<p>13. Ecological Information Solutions of ammonia in water are toxic to the aquatic environment. TLM96 : 10 to 1ppm.</p>
<p>14. Disposal Considerations Consideration as to the best means of disposal should be discussed with Hydro Chemicals and specialist waste disposal companies. The incineration of contaminated products is an option.</p>
<p>15. Transport Information Classification - Corrosive Emergency action : 2R. Carriage of Dangerous Goods by Road Regulations 1996. Carriage of Dangerous Goods (Classification, Packaging and Labelling)Regulations 1996.</p>
<p>16. Regulatory Information <u>Labels for supply</u> Corrosive and Dangerous for the Environment <u>Risk Phrases</u> R34 Causes burns , R 50 Very toxic to aquatic organisms. <u>Safety Phrases</u> S 1/2 Keep locked up and out of the reach of children, S26 In case of contact with eyes,rinse immediately with plenty of water and seek medical advice, S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection, S45 In case of accident or you feel unwell, seek medical advice immediately (show the label where possible) S61 Avoid release to the environment.Refer to special instructions/safety data sheet.</p>
<p>Issue Authorisation Signature: _____</p>

Appendix 5 - Transport Emergency (TREM) Card, Aqueous Ammonia

Transport Emergency (TREM) Card, Aqueous Ammonia

TRANSPORT EMERGENCY CARD (Road)		CEFIC TEC(R) - 219 11/1988 Class 8 ADR It. 43c		
CARGO	AMMONIA SOLUTIONS containing not less than 10% and not more than 35% ammonia <ul style="list-style-type: none"> • Colourless liquid with perceptible odour 			
NATURE OF HAZARD	<ul style="list-style-type: none"> • Volatile • Corrosive • Contact with liquid causes skinburns and severe damage to eyes • The vapour causes strong irritation to eyes and air passages • Heating will cause pressure rise with risk of bursting 			
BASIC PERSONAL PROTECTION	<ul style="list-style-type: none"> • Suitable respiratory protective device • Goggles giving complete protection to eyes • Apron or other light protective clothing, boots and plastic or synthetic rubber gloves • Eyewash bottle with clean water 			
IMMEDIATE ACTION BY DRIVER - Notify police and fire brigade <ul style="list-style-type: none"> • Stop the engine • No naked lights. No smoking • Mark roads and warn other road users • Keep public away from danger area • Keep upwind 				
SPILLAGE	<ul style="list-style-type: none"> • Drench with water. If this is not practicable, contain leaking liquid with sand or earth or other suitable material. Consult an expert. • Use waterspray to "knock down" vapour • Subsequently flush road with water • Prevent liquid entering water courses and sewers • If substance has entered a water course or sewer or been spilt on soil or vegetation, advise police 			
FIRE	<ul style="list-style-type: none"> • Keep container(s) cool by spraying with water if exposed to fire 			
FIRST AID	<ul style="list-style-type: none"> • If substance has got into the eyes, immediately wash out with plenty of water. Continue treatment until medical assistance is provided • Remove contaminated clothing immediately and wash affected skin with plenty of water • Seek medical treatment when anyone has symptoms apparently due to inhalation or contact with skin or eyes 			
Additional information	TELEPHONE	<table border="1"> <tr> <td>80</td> </tr> <tr> <td>2672</td> </tr> </table>	80	2672
80				
2672				
<small>DDP Teacnicols, Acax House, Lodon Road, Northfleet, Gravesham, Kent DA11 9JA, England. Tel: 01322 298837. Fax: 01474 588627. REPRODUCTION AND PHOTOCOPYING STRICTLY FORBIDDEN.</small>				
<small>COPYRIGHT BY CEFIC Prepared by CEFIC from the best knowledge available; no responsibility is accepted that the information is sufficient or correct in all cases</small>				
APPLIES ONLY DURING ROAD TRANSPORT		ENGLISH		