

**Document Title: NOTIFICATION AND INSPECTION OF AMMONIUM NITRATE STORAGE FACILITIES****Document Reference Number:** To be allocated**Open Government Status:** Fully Open**Date issued:** 01-03-2011**Review Date:** 01-03-2015**Author Unit/Section:** Agriculture and Food Sector**Target Audience:** FOD Heads of Operations; FOD inspectors and other visiting staff; FOD admin staff.**Brief Summary**

This guidance provides guidance on the application of the Notification of Installations Handling Hazardous Substances (Amendment) Regulations 2002 (NIHHS) and the storage of ammonium nitrate fertilisers at agricultural and other premises (e.g. ports).

**Purpose**

1. The purpose of this document is to:
  - i) Provide advice on the requirement for dutyholders to notify HSE if they are storing more than 150 tonnes of ammonium nitrate on any of their sites.
  - ii) Provide details on the process for notifying HSE.
  - iii) Remind HSE Divisions of HSE's commitment to inspect all newly notified sites.

**Action**

2. Staff in HSE's Field Operations Directorate (FOD) should forward any notifications received to the Agriculture and Food Sector at Nottingham.
3. HSE has given a commitment to Government that all newly notified sites will be inspected. Details of all new notifications will be distributed to FOD Divisional Heads of Operations (HoOps), who should arrange for these premises to be inspected.

**Background**

4. In September 2001, an explosion in a stack of ammonium nitrate in a factory in Toulouse, France killed 30 people, including 22 who were inside the building and eight members of the public in the surrounding area. A further 2,500 people were injured and thousands of properties were damaged. The building held between 300-400 tonnes of different compositions of ammonium nitrate.

5. Prior to this incident, the Notification of Installations Handling Hazardous Substances (NIHHS) Regulations 1982 required the notification to HSE of all stocks of ammonium nitrate equal to or in excess of 500 tonnes.
6. This threshold was based on knowledge as to the hazardous properties of ammonium nitrate at the time the regulations were made. The incident in Toulouse demonstrated that not only was the quantity of ammonium nitrate involved considerably less than the NIHHS threshold, but also that the worst effects to people resulted from the fire and explosion rather than from toxic effects.
7. As a result, HSE proposed amendment of the NIHHS Regulations to reduce the notification threshold to 150 tonnes and the period of notice from three months to four weeks. This amendment was implemented by the Notification of Installations Handling Hazardous Substances (Amendment) Regulations 2002.
8. The Agriculture and Food Sector manages the register of agricultural sites which store ammonium nitrate fertilisers above the NIHHS threshold (but below the COMAH thresholds). All such notifications should be made to the Sector who will collate the information, manage the notification database and distribute the necessary information to FOD divisions and other relevant Government departments.
9. In planning inspections of notified sites, inspectors should be aware that the quantity of fertiliser stored on farms varies through the year. Many farms will purchase supplies at discounted prices in the summer and store on site for application in the spring.

### **Notification by duty holders**

10. The amended regulations require that duty holders notify HSE if they hold or intend holding a combined weight of 150 tonnes or more of ammonium nitrate fertilisers (where the nitrogen content exceeds 15.75% by weight) at any of their sites, including agricultural premises.
11. Where a quantity of ammonium nitrate fertiliser exceeds the notification threshold but is held temporarily at a port as part of its onward delivery to customers, the Regulations do not apply.
12. The notification should include the details set out in Part 1 of Schedule 2 to NIHHS 1982 and be sent at least four weeks in advance of the commencement of the activity. To assist with submitting the necessary information, a form is available on the HSE website.
13. To comply with the regulations, duty holders should submit notifications to HSE either:
  - i) electronically to [ANNIHHS.Notifications@hse.gsi.gov.uk](mailto:ANNIHHS.Notifications@hse.gsi.gov.uk); or
  - ii) in writing to HSE, Agriculture and Food Sector, City Gate West, Toll House Hill, Nottingham NG1 5AT; or
  - iii) by telephone on 0115 971 2800; or
  - iv) by fax on 0115 971 2802.

14. Duty holders are required to keep the notification up to date and in particular should inform HSE if there has been a change to the maximum quantity of the hazardous substance, liable to be kept on site (NIHHS 1982 regulations 4 and 5). Farmers do not need to make annual re-notifications unless the particulars already notified have changed nor do they need to re-notify HSE every time ammonium nitrate based fertilisers are delivered to the site.

#### **Advice to duty holders**

15. HSE has produced a Self-Help Checklist for the Storage and Handling of Ammonium Nitrate Fertiliser to assist duty holders determine whether they have taken the necessary precautions to ensure its safe storage and handling.

16. Advice and guidance on the safe storage and handling of ammonium nitrate is contained in HSE free booklet IND(G) 230 and is applicable to the storage of ammonium nitrate fertilisers on farms and elsewhere. In addition, the Sector together with HSE's Explosives Inspectorate produced the table in the Appendix, which sets out a range of common storage issues together with guidance for dealing with a number of foreseeable scenarios.

#### **Advice to inspectors on possible enforcement action following inspection**

17. Details of new notifications will be distributed at regular intervals to FOD Heads of Operations under a 'Restricted' classification

18. Enforcement is dependent on being able to demonstrate risk to the health and safety of persons present on the farm or living or working in the vicinity. The following factors should be taken into account.

- i) Composition, in particular the nitrogen content, of the fertiliser. Fertilisers that contain 28% or less nitrogen by weight do not normally present an explosion hazard;
- ii) The probability of a fire in the vicinity of the fertiliser that may escalate without detection;
- iii) The probability of contamination of the fertiliser;
- iv) The probability of confinement of molten fertiliser;
- v) The proximity of farm workers, their ability to deal with incidents and/or to escape to a place of safety;
- vi) The proximity and number of residential properties;
- vii) The call-out time of the emergency services.

19. In the majority of cases it is expected that the risk of serious personal injury to people either on or off the farm will be remote against a corresponding benchmark of 'Nil'/Negligible'. Thus in most cases action is likely to be limited to the provision of advice.

20. More formal enforcement action may be appropriate where it is judged that residents either on or in the vicinity of the farm are at increased risk because of the

proximity of residential accommodation to the storage facility where a fire could develop without detection, e.g. at night resulting in an explosion or a plume of toxic fumes.

21. More formal enforcement action may also be appropriate where issues are identified at ports. Within ports, there is a greater concentration of activity and people so the consequences of an incident are likely to be greater than at a remote storage facility e.g. on a farm.

**Further information**

22. Further information can be found at [www.hse.gov.uk/agriculture/nihhs.htm](http://www.hse.gov.uk/agriculture/nihhs.htm)

## Appendix

### Common storage issues and guidance for duty holders

| Situation  | Comment   |
|--|---|
| 1. Part of the storage building is constructed of combustible material, e.g. gable end constructed of open timber boarding                               | 1. Storage buildings should be constructed of non-combustible materials. Where it is not reasonably practicable to store the fertiliser in another building, fertiliser should be stored as far away as possible from combustible materials. A separation distance of at least 2m should be maintained in all cases. (This also allows access for inspection of stocks).  |
| 2. Internal walls of building are lined with plywood or similar combustible material   | 2. Remove plywood. If for any reason this is not reasonably practicable, consider storage in a different building or part of the building. If there are no suitable alternatives, a minimum separation distance of 2m should be maintained.   |
| 3. Steel framework of building reinforced/repared with timber members.   | 3. The limited introduction (or presence) of timber members in the sides and/or roof of the building does not introduce a significant fire loading  |
| 4. Electrical services and equipment maintained in poor condition  | 4. Faulty or damaged electrical equipment is a major cause of building fires. Remove redundant equipment and question the need for other equipment/services being retained in the area where fertiliser is stored. Essential equipment should be inspected and tested at regular intervals. Fertiliser should be stored at least 1m away from electric lights, switchgear etc.  |
| 5. Diesel/oil storage tank located adjacent to outside wall of storage building  | 5. Risk of contamination and fire. The degree of risk depends on several factors including the flammability of the fuel, the capacity, construction and bunding of the tank, the construction and integrity of the intervening wall, the location of potential ignition sources, the proximity of stored fertiliser, the direction of the slope of the land etc. The most significant factors are the construction and integrity of the intervening wall and the slope of the land. If necessary the fertiliser should be relocated to a different building or, if retained in the same building, should be moved away from storage tank. |
| 6. Vegetation growing around storage building  | 6. All combustible vegetation should be removed from the immediate vicinity of the building   |
| 7. Equipment constructed of combustible material, e.g. timber ducting from a grain drying plant is located in or adjacent to the fertiliser storage area | 7. Immediate action: disconnect any associated electrical equipment. Longer term action: dismantle and remove if redundant or clad with fire resistant board. Alternatively, consider relocating the fertiliser.  |
| 8. Open channels or holes in floor of storage area   | 8. Fill all channels or holes with non-combustible material and seal to prevent any molten AN from a fire entering any confined   |

|  |   |
|--|---|
|  | space.  |
| 9. Fertiliser stored against wall of building  | 9. A minimum separation distance of 1m should be maintained to allow examination of stocks and access/egress in an emergency. It will also allow bait to be placed to control rodents.  |
| 10. Silage clamp located in adjacent bay of storage building and separated from fertiliser by wall of vertical timber railway sleepers | 10. A minimal fire risk but the hazard is significant were the sleepers to be involved in a fire. A firebreak separation distance of 5m or a barrier of inert material of at least 1.5m should be maintained for fertilisers where the nitrogen content >28%. The firebreak separation distance can be reduced to 2m for fertilisers where the nitrogen content is < 28%. Alternatively, a fire resistant barrier e.g. breezeblock perlite barrier could be constructed.  |
| 11. 'Big-Bags' (500kg) of fertiliser stored on timber pallets inside a building  | 11 Unless necessary for handling, there is no reason to store "big-bags" as opposed to sacks on pallets. Establish the reason for storage on pallets. It is not necessary to store "big-bags" on pallets to keep the product dry where the building has a concrete or similar floor. If stored on pallets, the pallets should be in good condition to prevent damage to the bags of fertiliser.   |
| 12. Timber pallets stored in immediate vicinity of fertiliser  | 12. Remove the pallets from the building or store at least 5m away from fertiliser. Alternatively place a barrier of inert material between pallets and fertiliser. The barrier should be at least 1.5m wide (one pallet width).  |
| 13. Hay, straw, grain, feedstuffs or other combustible material stored adjacent to fertiliser  | 13. Remove from building or store at least 5m away from fertiliser. Alternatively place a barrier of inert material between combustible material and fertiliser. The barrier should be at least 1.5 m wide (one pallet width).  |
| 14. Loose hay, straw, timber or other combustible material (including used fertiliser bags) accumulated on floor of storage building   | 14. Good housekeeping. Clear all loose combustible materials from the building.   |
| 15. Tractor, forklift truck (diesel or LPG powered) or diesel bowser parked in storage building adjacent to fertiliser                 | 15. Dedicated parking bays should be provided at least 5m away from fertiliser and positioned so that any fuel/oil spillage will run away from the stored fertiliser. All vehicles/bowsers should be properly maintained to prevent leakage of fuel or oil that could contaminate the fertiliser.   |
| 16. No fire extinguisher. No hose reel   | 16. A portable water fire extinguisher or properly maintained fire hose reel should be provided to tackle incipient fire in or around storage building.<br>The local fire authority should already have been informed that ammonium nitrate fertiliser is stored on the premises as storage of 25 tonnes or more are notifiable under The Dangerous Substances (Notification and Marking of Sites) Regulations, 1990. Arrangements should be made for providing early warning of a fire, for suitable access to the site (at all times) and for making sure that an adequate supply of water is available, or can |

|  |   |
|--|---|
|  | be made available, to tackle an incident.   |
| 17. No general warning sign erected at access points to farm. No warning signs on building | 17. Suitable warning signs should be erected at access points to a farm on which 25 tonnes or more of dangerous substances are liable to be present as required by The Dangerous Substances (Notification and Marking of Sites) Regulations 1990. Ammonium nitrate fertilisers that are classified for carriage as "Oxidising Agents" fall within the definition of dangerous substances for the purposes of the 1990 Regulations (check label on bag to make sure - relevant UN numbers are 1942, 2067, 2068, 2069, 2070 and 2072).<br>NB. The requirement to erect signs is enforced by the local fire authority. |