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## **China - Peoples Republic of**

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### **China Announces Revised Standards on Storage and Transport for Grain**

**Report Categories:**

FAIRS Subject Report

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**Report Highlights:**

On September 4, 2015, China notified the WTO of the National Food Safety Standard on Storage and Transport for Grain, issued by the National Health and Family Planning Commission (NHFPC), as SPS/N/CHN/1001. The deadline for submission of final comments to China is November 3, 2015. This standard pertains to the storage and transport of general designation of unprocessed grain. The proposed date of entry is yet to be determined. Comments can be sent to China's SPS Enquiry Point at [sp@aqsiq.gov.cn](mailto:sp@aqsiq.gov.cn). The following report contains an unofficial translation of this draft measure.

**Executive Summary:**

On September 4, 2015, China notified the WTO of the National Food Safety Standard on Storage and Transport for Grain, issued by the National Health and Family Planning Commission (NHFPC), as SPS/N/CHN/1001. The deadline for submission of final comments to China is November 3, 2015. This standard pertains to the storage and transport of general designation of unprocessed grain, and it will partially replace (GB/T22508-2008) Code of Practice for the Prevention and Reduction of Mycotoxin Contamination in Cereals. The proposed date of entry is yet to be determined. Comments can be sent to China's SPS Enquiry Point at [sps@aqsiq.gov.cn](mailto:sps@aqsiq.gov.cn). The following report contains an unofficial translation of this draft measure. In addition, interested parties are also welcomed to submit comments through the U.S. SPS Enquiry Point below so that comments can be considered as part of the U.S. Government official comment submission to the WTO:

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**BEGIN TRANSLATION:**

## National Food Safety Standard Hygienic Specifications of Storage and Transport for Grain

(Draft for comments)

Issued by National Health and Family Planning Commission of the People's Republic of China

### Foreword

This national standard will replace GB/T22508-2008 Code of Practice for the Prevention and Reduction of Mycotoxin Contamination in Cereals.

In comparison with GB/T22508-2008, the main changes in this standard are as follows:

- The contents of plantation, pre-harvest and harvest time were deleted;
- To prevent and reduce the fungal toxin contamination in the original standard was modified as to prevent and reduce to possible biological contamination, chemical contamination and physical contamination in grain storage and transport process;
- The requirements for hazard factor control were refined for grain transport process and the standard operability was promoted.

National Food Safety Standard

# Hygienic Specifications of Storage and Transport for Grain

## 1 Scope

This standard specifies the basic hygienic requirements, operating rules and monitoring and evaluation measures in raw grain storage and transport process.

This standard is applicable to the raw grain and storage and transport.

## 2 Terms and Definitions

### 2.1 Raw grain

General designation of unprocessed grain, e.g., rice, wheat, corn and soybean.

### 2.2 Grain storage and transport

Raw grain storage and transport

### 2.3 Granary

The building for grain storage and meeting the basic functional requirements of grain storage.

### 2.4 Safe moisture content

The highest moisture content, under which it is adequate to prevent the grain from heating and mildewing in the expected storage and transport conditions.

### 2.5 Contamination

A process in which the grain is affected in its storage and transport process (including biological contamination, chemical contamination and physical contamination), which results in the change in grain quality safety, nutrition or sensory attributes.

## 3 Quality requirements for grain storage & transportation

3.1 Different kinds of grain quality should comply with relevant quality standards.

3.2 The grain hygiene shall meet the requirements of GB 2715.

## 4 Requirements for Storage Facility and Equipment

4.1 The grain depot shall be constructed in accordance with the grain warehouse construction standard and relevant granary building design specification.

4.2 The equipment and appliance contacting grain shall be made of safe, non-toxic and odorless material easy for cleaning and maintenance.

4.3 All production equipment shall be designed and structured in a way preventing the part, metal debris, lubricating oil or other contaminants from mixing in the grain and shall be easy for cleaning, check and maintenance.

4.4 The empty granary, equipment, apparatus and appliance shall be subjected to check, clearing and maintenance as well as disinfection if necessary, prior to grain warehousing, to ensure that the granary and door & window are under good conditions and all empty granary, equipment, apparatus and appliance are free from residual grain, dust, sundries and live insect.

To ensure that the barn doors and Windows in good condition; all the empty warehouse equipment and utensils should not be residual food grains Dust and debris and may not be a live worm.

## 5 Grain Depot Area Environment

5.1 Consideration shall be given to the potential contamination risk caused by the grain depot area environment and the appropriate measures shall be taken to minimize the risk.

5.2 The grain depot shall have a reasonable layout, with obvious division of various functional areas and appropriate separation and segmentation measures.

5.3 The road in grain depot shall be paved with concrete, asphalt or other hard material; and the necessary measures shall be taken for the open ground, e.g., cement paving, tile paving and turf lying, to keep a clean environment and prevent the raise dust and stagnant water under normal weather conditions.

5.4 The granary shall be kept away from the places with potential hazard of huge insect pest breeding.

5.5 The goods yard and work area shall remain clean, with residual grain, dust and sundries removed in time.

## 6 Requirements for Transport Facility and Equipment

6.1 The grain container (compartment) shall have good sealing performance and damp proof and thermal insulation performance. The grain container (compartment) shall be provided with the equipment for protection against dust, fly, sunshine and rain.

6.2 One truck for one ship (or compartment for large ship), the grain loaded on a ship must be of the same variety, grade and quality. If the mixed loading is required because of special circumstances, the corresponding isolation measures shall be taken and the obvious mark shall be provided.

6.3 The grain vehicle and ship must be padded (except for special-purpose railway K17 grain bulk transportation vehicle), the bedding materials are limited to hessian cloth and woven plastic sheet only and no rick hull, bamboo strip, rush mat and other articles are allowed for padding.

Shall not use chaff thin bamboo strip reed mat or other items.

6.4 When the packaged grain is loaded to the railway truck, the backing must be prepared on vehicle top and the rope net must be applied for consolidation.

6.5 In case of waterway transport, the compartment cover shall be closed and sealed tightly after the grain is loaded into the compartment.

## 7 Hygienic management

### 7.1 Hygienic management system

7.1.1 The health management system and assessment index should be formulated and the post responsibility system should be implemented.

7.1.2 The health inspection plan should be formulated, and the plan implementation shall be recorded and archived.

### 7.2 Grain and facility hygienic management

7.2.1 Granary and related facilities should be kept clean, repair or update the problems in time

7.2.2 Granary and related facilities should be cleaned and disinfected before loading

## 8 Grain safety control in storage and transport process

### 8.1 Microbial contaminant control

#### 8.1.1 Grain moisture content

8.1.1.1 The grain moisture content should be checked and recorded regularly during food storage. If the grain moisture content is higher than the safe moisture content, the drying measures shall be taken to reduce the grain moisture content to below the safe moisture content.

8.1.1.2 If the grain moisture content is higher than the safe moisture content after the grain is transported to the destination, the drying measures must be taken in time to reduce the grain moisture content to below the safe moisture content.

#### 8.1.2 Temperature and humidity

8.1.2.1 If the grain situation monitoring result shows that an abnormal temperature exists, the emergency measure shall be taken, and if the grain is heating or mildewing, the part of grain shall be separated and sampled for inspection and the reserved grain shall be subject to ventilation and cooling.

8.1.2.2 If the temperature in granary is high, the timely ventilation is required for accumulated heat extraction.

#### 8.1.3 Empty granary cleaning

The granary, goods yard and work area shall be cleaned completely to remove the residual grain, dust and sundries and fill the hole and crack.

#### 8.1.4 Microbiological contamination prevention

8.1.4.1 The grain for storage shall contain as less impurity, broken grain, worm-eaten grain, sprouting, mildew and scab as possible.

8.1.4.2 The grain shall be protected against contamination due to the operation, use and maintenance of the vessel and appliance for conveying, loading and storage and transport of grain.

8.1.4.3 The storage facility shall be rain proof and ground water seepage proof and be influenced as less as possible by the atmospheric temperature and humidity.

#### 8.1.5 Microbiological monitoring

The mold can be used as the indicator microorganism and may be monitored in the grain storage and transport process according to the requirements of annex a.

### 8.2 Stored-grain pests control

8.2.1 A good job shall be done in the cleaning and pests killing for the empty granary, apparatus and conveyance.

#### 8.2.2 Sealing door & window installation

The insect prevention line and fly net shall be provided at the warehouse door & window.

8.2.3 The grain pile temperature and relative humidity shall be lowered to the maximum extent required for reducing the pest growth and reproduction.

8.2.4 The stored-grain protectant, fumigation agent or modified atmosphere technology shall be adopted to prevent

the grain contamination by pest and mite.

### 8.3 Chemical contamination control

8.3.1 The chemical pollution management system should be established, analysis of possible pollution sources and pollution ways shall be made and the control measures shall be proposed.

8.3.1 The grain failed to meet the regulations of GB 2715 shall be stored separately and disposed according to the relevant regulations.

8.3.2 The fumigants meeting the requirements shall be selected and shall be used according to LS 1212-2008 Guideline of Pesticide Management and Application for Stored Grain. Its usage shall be registered, with usage record well kept.

8.3.3 The chemicals shall be stored separately, labeled clearly and stored by specially-assigned person.

### 8.4 Physical contamination control

8.4.1 The grain shall be protected against the contamination due to foreign materials (e.g., glass, metal fragment, dust and sand grain), through such measures as equipment maintenance, hygienic management, field management, foreign workers management and processing monitoring.

8.4.2 The effective measures shall be taken for eliminating the impurity and preventing the foreign sundries mixing in the grain.

8.4.3 In case of field repair, maintenance and construction, the appropriate measures shall be taken to prevent the grain contamination due to foreign matter, peculiar smell and fragment.

### 8.5 Material with direct contact to grain

All materials with direct contact to grain shall be non-toxic and harmless and cause no contamination to grain.

### 8.6 In-warehouse and ex-warehouse

#### 8.6.1 In-warehouse

8.6.1.1 The grain shall be stored by variety, grade and production year separately; and the grain containing safe moisture content, semi-safe moisture content and dangerous moisture content shall be stored separately. The high quality variety and common variety of grain shall be stored separately.

8.6.1.2 The in-warehouse and ex-warehouse shall be conducted by reasonable use of convey equipment, to reduce damage and raise dust. The effective measures shall be taken in in-warehouse process, to reduce automatic grading and prevent impurity gathering.

8.6.1.3 The packaged grain shall be piled up in a reasonable, staggered, order and secure way. The packaged grain shall be piled up with over 1.0 m distance to the wall column; and the high moisture content grain shall not be piled up to over 3m and shall be disposed as soon as possible.

8.6.1.4 The bulk grain shall be stored in bulk, with an even grain surface not exceeding the design grain loading line.

#### 8.6.2 Ex-warehouse

The quality inspection and inspection report shall be issued during grain ex-warehouse.

### 8.7 Transport

8.7.1 The grain transport vehicle, ship and vessel shall be completely cleaned prior to each grain shipment, and

those loaded with other articles, especially for livestock, shall be cleaned and disinfected prior to grain loading and transport.

8.7.2 The transport vessel and equipment shall be dedicated and the grain shall not be transported together with chemicals or toxic substances.

8.7.3 The grain shall be transported by the enclosed vehicle to prevent the contamination in transport process.

8.7.4 The grain transport container (compartment) shall be covered and padded and be provided with the equipment for protection against dust, sunshine and rain.

8.7.5 To ensure the grain flavor and prevent grain mildewing, the temperature and humidity shall be controlled within an appropriate range as far as possible in the transport process.

8.7.6 The goods yard and berth for grain loading and unloading in station and dock shall be dedicated and the places in which the pesticide, fertilizer, toxic or harmful articles was piled up, shall be cleaned completely and padded. No contaminant shall exist around the goods yard.

## 8.8 Granary and conveyance cleaning

8.8.1 The warehouse, equipment, apparatus and appliance shall be checked to confirm that they are under good conditions and all equipment operates normally.

8.8.2 The granary, goods yard and work area shall be cleaned completely to remove the residual grain, dust and sundries and fill the hole and crack.

8.8.3 If the live insect or egg exists in the warehouse, packaging apparatus, grain loading appliance and convey equipment, empty granary pesticide shall be used for killing pests and the residual pesticide shall meet the requirements of relevant regulations and announcements.

## 9 Inspection

9.1 The self-inspection or entrustment to the corresponding food inspection institution shall be carried out.

9.2 For self-inspection, the inspection room and inspection capacity adaptive to the inspection items shall be provided; and the qualified inspection shall conduct the inspection according to the stipulated inspection method.

9.3 The perfect management system shall be established in the laboratory for proper storage of various inspection records and inspection reports. The product sample reservation system shall be established for timely sample reservation.

## 10 Training

10.1 The training system shall be established for corresponding grain safety knowledge training to the relevant personnel.

10.2 The annual training plan shall be worked out according to the different post systems, and workers involved in special type of work shall possess required work permits.

10.3 The training plan shall be audited and revised and training effect shall be evaluated and checked on a regular basis, to ensure its effective implementation.

10.4 The training record shall be kept properly.

## 11 Management Organization and Personnel

11.1 The grain safety management system shall be established and improved and the corresponding management measures shall be taken, for quality control of the entire grain storage and transport process and ensuring the conformity of grain with the requirements of relevant laws and regulations and standards.

11.2 The grain safety management organization shall be established for enterprise grain safety management.

11.3 In the grain safety management organizations at all levels, various departments shall be configured with the grain professionals and management personnel who have received the professional training.

## 12 Record and Document Management

### 12.1 Record management

12.1.1 The corresponding record management system shall be established for detailed record of grain and relevant material procurement, inspection, storage and transport and other links and improvement of the credibility and effectiveness of grain safety management.

12.1.2 Various records shall be subject to the compound signature or seal by the operational staff and relevant supervision personnel, and in case of any modification of record, it is forbidden to remove the original contents and the modifier shall attach the signature or seal near to the modified contents.

12.1.3 All records shall be audited by the relevant departments to ensure all disposals meet the relevant regulations, and in case of any abnormal phenomenon, report it immediately.

12.1.4 Relevant records specified by this specification shall be kept for a minimum of two years.

12.2 The document management system and complete quality management archive shall be established, and the documents shall be archived and stored by category. The documents for distribution and use shall be the approved current text. The repealed or invalid document shall be archived for future reference and shall not appear on work site.

12.3 The advanced technological means (e.g., computer information system) are encouraged for record and document management.

## Annex A

### Guide for mold monitoring procedure in storage and transport process

The grain is easy for heating and mildewing under the influence external environment in storage and transport process, so the relevant microbiological indicators shall be monitored in the processes of grain purchase, in-warehouse, storage, ex-warehouse and transport, etc. Take the mold as the indicator microorganism

#### A.1 Sampling period

The quantity of mold in grain is closely related to the grain moisture content and it is difficult to detect the grain in the storage and transport processes and other processes, so the mold is monitored in combination with grain moisture content. Such four process of grain purchase, storage, ex-warehouse and transport are monitored in the grain storage and transport process.



#### A.1.1 Purchase

The grain moisture content shall be detected at first in grain purchase process. If the grain moisture content is lower than the safe moisture content, the mold in grain will not reproduce and the grain can be warehoused safely. If the grain moisture content is higher than the safe moisture content, the grain shall be dried, sun cured and the like, to reduce the moisture content to below the safe moisture content prior to warehousing.

#### A.1.2 In-warehouse

The empty granary and apparatus shall be cleaned and disinfected completely prior to grain warehousing. The inside and outside of granary shall be cleaned, without any residual grain, crack, hole and dead angle. The microorganism and variety quantity in granary shall be investigated prior to disinfection, for the purpose to select the disinfectant correctly. The grain warehousing shall be carried out in sunny and rainless days. The grain shall be stored by variety, grade and production year after warehousing.

#### A.1.3 Storage

The grain moisture content shall be detected in the storage process on a regular basis. Moreover, the sampling and determination of moisture content and total mildew shall be carried out for the grain pile point with abnormal temperature rise. The storage facility shall be provided with the excellent drying and ventilation equipment.

#### A.1.4 Ex-warehouse

The grain ex-warehouse shall be carried out in the days other than the rainy or extremely high air humidity days and the impurity removing and grain purification shall be carried out according to the national standards.

#### A.1.5 Transport

The vehicle (ship) shall be checked carefully for conformity to the safe transport standard prior to loading grain into vehicle (ship). Follow the principle of "no loading under five conditions", i.e., no loading for incomplete vehicle body, door & window, ship bottom and shipside, no loading without covering material, bedding material or rainproof material, no loading for possible scattering and leakage and moisture and damage, no loading in vehicle (ship) accommodated the fertilizer, pesticide and other articles possibly contaminating the grain, no loading in the vehicle (ship) without cleaning and disinfection or with inadequate cleaning and disinfection and no loading in the vehicle (ship) without clearing or with adequate clearing. Different grades and varieties of grain shall be loaded separately. If the transported grain has a moisture content higher than the safe moisture content, the supervision and inspection shall be strengthened and the appropriate measures shall be taken to prevent the mold growth and reproduction during transport.

### A.2

The sampling shall be carried out according to GB 5491 Inspection of Grain and Oil seeds - Methods for Sampling and Sample Reduction.

#### A.3 Monitoring frequency

If the grain pile temperature is at 15°C or below, the inspection on safe grain and oil plants (grain containing safe moisture content and with no pest or few pests only) shall be carried at least once 15 days, the inspection on the semi-safe grain (grain containing semi-safe moisture content and with common pests only) shall be carried at least once 10 days and the inspection on the grain containing dangerous moisture content shall be carried out at least once five days; and if the grain pile temperature is over 15°C, the inspection on the safe grain shall be carried out at least once seven days, the inspection on the semi-safe grain shall be carried out at least once five

days and the inspection on the grain containing dangerous moisture content shall be carried out at least once three days. The detection frequency shall be added appropriately for the newly harvested grain after purchase and warehousing.

#### A.4 Mold limit requirements

See the table below for the requirement for mold and sampling method in grain storage and transport process:

Microorganism	Numerical value(cfu/g)	Sampling plan
Mold	m=100 ~ 10000 M=100000	n=5 c=2

(Note: Sampling scheme of International Commission on Microbiological (ICMSF) Specifications for Foods: the number of sample shall be collected for the same batch of product; c: the maximum value: higher than m. sample number; m: microbiological indicator acceptable level limit; M: microbiological indicator highest safety limit value.)

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