

## **METAL DETECTION**

### **Purpose**

This instruction defines policies and procedures associated with testing products for metal contamination.

### **Policy**

When metal detection is required by a specification, products will be examined for the presence of metal in accordance with the provisions of this instruction. Metal detection devices must be approved by Food Safety and Inspection Service (FSIS) and be capable of detecting metallic contaminants including, but not limited to, stainless steel shavings, pieces of metal from processing equipment, metal fragments from cutting knives, metal staples, and packaging fasteners. Depending upon the specification and contractual requirements, metal detection may be required prior to or after packaging and/or packing. Unless otherwise specified, products are examined after final mechanical processing (e.g., grinding, blending, dicing, patty formation).

#### **I. Metal Detection Equipment**

Metal detection equipment is tested for proper functioning at least once every hour. Graders may perform more frequent tests if they suspect equipment is unreliable for any reason. Official detection test standards (encased in tamper-proof Plexiglas) designed to test the applicable sensitivity level are provided by the QAD. Other devices such as x-ray equipment may be utilized after approval has been granted by the National Supervisor. Records of the hourly checks and related results are recorded by the grader on QAD Form Metal Detection-1.

#### **II. Sensitivity Levels**

Unless otherwise specified in contractual documents, sensitivity levels capable of detecting metal contamination in product may be checked in-line (pumped or vacuumed), prior to packaging, after packaging, or after using the appropriate test strips as follows:

#### **III. Poultry**

1. Prior to packaging - nuggets, patties, parts, etc. Testing shall be with a 1.5 mm 440 stainless steel strip.
2. After packaging or packing - bologna, roasts, turkey ham, rolls, nuggets, patties, or diced product etc. Testing shall be with a 3.0 mm 440 stainless steel strip.
3. In-line closed systems - Testing shall be with a flexible 3.0 mm 440 stainless steel test strip through a test port into the center of the detector field. Alternatively, a flexible 1.5 mm 440 stainless steel test strip inserted into the detector field at the outside edge of the pipeline may be used.

## **IV. Red Meat**

Graders shall ensure that metal detectors are capable of detecting stainless steel, ferrous and non-ferrous metals. The processor must state in their program the type of equipment, location, detection procedure and sensitivity levels.

### **Procedures**

#### **I. Equipment Test Procedures**

When product is being run through the metal detector prior to or after packaging, insert the test strip into the detection field directly following the product. For packed product, place the test strip in the center of the shipping container and allow it to pass through the detection field. If the alarm functions on the initial test the equipment is operational and no further checks are required for that sampling interval. If the alarm fails to activate on the initial check, insert the test strip nine more times. If the unit alarm fails to activate on any of the additional tests, the equipment is not functioning properly. When a malfunction is detected, retain all product produced since the last acceptable check. The product must be reworked through a properly functioning metal detector or rejected for use under the applicable specification. Product that is suspected of containing metal will be referred to FSIS for disposition. Additionally, verify that the product reject method is also functioning properly. When testing the equipment, the test strip must remain on the line until the reject mechanism actually diverts the test strip or associated product. For in-line systems, testing may be accomplished by inserting the test strip into the product or outside the pipeline. When testing externally the timing must be verified to ensure a diversion would actually reject the affected product. The method of timing verification for in-line systems shall be documented and placed in Graders file. Regardless of the reject method being utilized, if the equipment fails to properly reject the test strip or associated product, retain all product produced since the last acceptable check and follow the procedures for rework and disposition as stated above.

#### **II. Product Retesting**

Products that require retesting are examined as follows:

1. Products controlled due to a detection equipment malfunction.

These products are retested in a manner that ensures compliance with the designated sensitivity level. This examination may be accomplished by the original equipment after it is repaired or any other equipment that can ensure compliance. Products may have to be removed from packaging material for reexamination, depending on the style of packaging and the sensitivity of available metal detection equipment.

2. Rework of end-item and other products prior to final packaging or packing.
3. Rework products and other products not immediately packaged after processing (i.e.,

disruption in normal product flow may have resulted in contamination) must be subjected to retesting for the presence of metal. For example, ground beef removed from defective chub packages must be retested for metal contamination before final acceptance. Rework and retesting are accomplished according to FSIS regulations and in a manner that ensures all products are examined for metal contamination and promptly repackaged.