Page H. Inspection of Instant Products Operations. (Form DA - 151 - 7)

When referring to other section items for inspection guidance, make appropriate interpretations of terminology which do not alter the intent of the guidance provided.

Product Dumping

Item H1—Room Construction (58.126, 58.212).

See the guidelines for Item G1—Room Construction.

Item H2—Lighting & Ventilation (58.126d, e).

See the guidelines for Item A2—Lighting & Ventilation.

Item H3—Dump Hopper & Screen (58.228).

See the guidelines for Item G3—Dump Hopper & Screen.

Item H4—Bulk Dumping Equipment (58.128, 58.212).

See the guidelines for Item D45—Tote to Bag Packaging.

Item H5—Conveyors (58.128a, 58.221, 58.228, 58.246).

See the guidelines for Item D24—Product Removal & Conveying Equip.

Item H6 —Sifter (58.224 and 58.246).

See the guidelines for Item D37—Sifter.

If the base product is received in bulk (tote bins or super saks) and the product was sifted at the place of manufacture, a sifter is not required at this stage of the instantizing process. However, bagged product should be sifted to prevent pieces of paper, plastic, or string from entering the product.

Item H7—Dust Control (58.212, 58.230).

See the guidelines for Item G6—Dust Control.

Item H8—Housekeeping (58.126d, 58.127f, 146d).

See the guidelines for Item A7—Housekeeping and Item G7—Housekeeping.

Agglomerating & Redrying

Item H10—Room Construction (58.126).

See the guidelines for Item A1—Room Construction.

The location of doors or the adjacent operations shall not cause excessive or unnecessary personnel traffic in the agglomerating area.

Carefully check for deficiencies in floor drains and traps that are located in the areas of air intakes for processing or conveying air.

Item H11—Lighting & Ventilation (58.126d, e).

See the guidelines for Item A2—Lighting & Ventilation.

The room which houses the agglomerating system may be ventilated with air movement induced by the agglomerator itself and the redrying air intakes. Outside air is drawn into the area opposite the system intake air filters. As the air circulates it picks up some heat as it passes over warm surfaces of the equipment. Generally room ventilation is not a problem because of the large volumes of air being used in the process.

For systems that use steam as the agglomerating media, check the areas around the steam pipes for leaks that may cause humid conditions sufficient for mold growth.

When systems are used only intermittently or have been shut down for extended periods, check them more closely for condensation and mold.

Item H12—Conveyors & Metering Equipment (58.128a, 58.228 58.246).

See the guidelines for Items D24—Product Removal & Conveying Equip.

If a new system utilizes a rotary airlock valve as the metering device, the valve shall be reviewed and accepted for use by USDA. Make recommendations as appropriate. Installed rotary valves which do not meet the established USDA criteria but have been under continuous USDA inspection may continue to be used. However, when a new valve has to be installed, it shall comply with the USDA requirements.

Item H13—Feeding Equipment - Vitamins, etc. (58.128a, 58.223).

See the guidelines for Item G12—Feeding Equipment - Vitamins, etc.

Item H14—Moistening Equipment (58.128 a, 58.223).

Some instantizing systems do not use special wetting and redrying equipment. These "single pass" systems may use a variety of methods of air or gas (usually nitrogen) injection to foam the condensed product as it is atomized in the drying chamber. These systems shall be inspected using the dry products inspection criteria covered by Items D15 through D31.

Systems that utilize a moistening medium shall meet the *3-A Accepted Practices for Instantizing Systems for Dry Milk and Dry Milk Products, Number 608-* . These systems may be designed to operate either pneumatically or mechanically.

Pneumatic systems generally consist of a high volume air stream containing the dry product and other dry ingredients such as the vitamins, which blows past or through an injector or nozzle which introduces the steam or liquid wetting medium. The equipment is designed so that the interface area of the air stream and the liquid medium creates high turbulence completely wetting the dry products and the individual particles begin to agglomerate (clump together). The agglomerated particles are then carried through the rest of the system by the air stream.

Mechanical systems work on the same principle, but make use of a high speed agitator blade assembly to create the necessary turbulence for wetting the dry product stream.

Pneumatic and mechanical systems can use the same wetting media. Generally, the wetting medium is saturated steam, water, or a mixture of water and other liquid ingredients such as lecithin, or pasteurized skim milk.

When skim milk or other dairy products are used as the moistening medium, all tanks, pipelines and valves shall meet product contact surface requirements for fabrication and sanitation.

Unlike other dry products systems, portions of an agglomerating system require daily wet washing. This is because of the moisture added during the agglomeration process. Generally, daily wet cleaning of the system up to the redrying equipment is required. Product conveying lines, airlock valves, collectors, sifters, and the rest of the system may be wet cleaned only occasionally.

All moistening medium injectors, nozzles, venturi, rings, etc. which are within the product contact zone shall be of sanitary construction. These components shall be accessible for inspection and cleaning. They shall be designed for daily disassembly and hand cleaning. They shall be free of cracks, crevices, and exposed threads.

If the equipment is cleaned by mechanical means, all product contact surfaces are to be designed so they can be cleaned effectively while fully assembled or they shall be designed so that they can be easily detached for hand cleaning. Adequate cleaning facilities (i.e., COP tanks, drying racks, mats, brushes, cleaning compounds, etc.) shall always be available for general cleaning purposes. Mechanical cleaning devices which are permanently installed in the equipment shall meet all product contact surface requirements for design and construction.

Mechanical devices which are inserted into the equipment for cleaning purposes only and are removed during production do not have to meet product contact surface requirements.

Inspect the mechanical cleaning system to check that provisions have been made to automatically control the cleaning process. Rinse and solution temperatures, cleaning cycle durations, and cleaning compound additions are to be automatically controlled. To determine the effectiveness of the cleaning regimen, disassemble some components of the system and check for product residues. If ineffective cleaning is noted, make the appropriate recommendations on the survey report.

Item H15—Moistening Medium.

Check that the moistening medium is prepared and handled carefully to prevent the contamination of the product stream. Dry nondairy ingredients that are used in water mixtures shall be prepared using the same procedures and techniques as dry dairy ingredients. Bags are to be cleaned and the outer plies shall be removed prior to dumping the ingredients. Dump hoppers and blending equipment are to be kept clean and shall not contribute to unsatisfactory housekeeping conditions in the plant.

Dump rooms, hoppers, and conveyors shall comply with the inspection guidance of Items H1 through H8. Liquid or reconstituted dairy products shall be pasteurized before injecting them as the moistening medium.

Steam, if used, shall be of culinary quality (see the guidelines for Item A36—Culinary Steam).

When water or water mixtures are used, check that the water supply is a potable supply or State accepted process water (see the guidelines for Item A38—Water Supplies & Handling). Cow water, condensate or RO permeate are not acceptable moistening mediums. If any of these are used, recommend the INELIGIBLE status. Check that water supply lines have the proper check valves and back-flow preventers. If provided, check mixing tanks for cleanliness. These items do not require sanitary dairy construction but they should be clean. Iron pipes and vessels with threaded fittings may be used up to the introduction into the product contact area provided that a sanitary check valve separates the nonsanitary and sanitary pipelines, and that the product contact fittings are of sanitary design.

Item H16—Redryer Air Filters & Heaters (58.128a, 58.220c).

See the guidelines for Items D20—Dryer Air Supply and D21—Dryer Air Heating System.

Check that the design and fabrication of redryer air filters and heaters meet the requirements in the *3-A Accepted Practices for Instantizing Systems for Dry Milk and Dry Milk Products, Number 608-* .

Air heating coils or finned radiators shall be clean and free of product and dust accumulations. If placed downstream from air filters, the heating coils shall be made of stainless steel, be of

sanitary design and fabrication and shall be accessible for cleaning and inspection. Access doors are to be tight fitting with good-condition gaskets. Piano style hinges should not be used.

Fans located downstream from air filters shall be made of stainless steel and be of sanitary design and fabrication.

Check that air filters are properly placed and that the filter housings, fan shaft annular space openings, plenums and ducts are tight-fitting and properly gasketed to prevent the entrance of unfiltered air into the system.

Item H17—Product Redrying Equipment (58.128a, 58.220c, 58.223).

Redrying equipment for an instantizing system is often quite different from redryers found on conventional spray dryers. The agglomerated (instantized) product is very fragile so it must be treated gently to minimize the creation of excessive fines which will require further reclaiming and reprocessing and reduce the efficiency of the operation.

The most common style of redryer in an instantizing system is the fluid bed redryer. The product is continuously fed onto the screen bed. Warm or cool air is introduced into the air plenum chamber below the screen. As the air travels upward through the screen, it dries or cools the product and "fluidizes" it as well. The product is then gently moved along the screen from the inlet to the outlet by a shaking or vibratory action. This drying equipment may come in different sizes and may be designed for either manual disassembly and hand cleaning or for mechanical cleaning.

Air chambers below the screen shall have continuously welded joints and seams. The joints may be of any radius. The welds need not be polished but shall be relatively smooth and snag-free without any pits or voids.

Screens which are bolted between flanges are acceptable. Screens which are intended for mechanical cleaning shall form a tight, gasketed seal with no decreasing angles formed by the construction of the flanges. When screens are welded, access shall be provided above and below the screen for inspection and cleaning.

Like other drying equipment, fluid bed redryers do not require daily wet cleaning. The interior of the units may be cleaned by brushing or vacuuming. However, when wet cleaning is performed, all product and air contact surfaces must be completely and effectively cleaned.

Equipment that is designed to be cleaned without disassembly shall have all product and air contact surfaces cleaned by mechanical means. Components that cannot be mechanically cleaned shall be disassembled and hand cleaned. Spray balls and other cleaning devices that are left in the equipment during production shall be of sanitary design. Spray cleaning devices that do not have a sanitary design are acceptable if they are removed during production and inserted only for the cleaning process.

Item H18—Star Valves, Connectors, Fittings (58.128).

See the guidelines for Item D24—Product Removal and Conveying Equip.

Connections, sensors or other devices attached to the product contact surfaces shall be of sanitary design. Check the units for possible entry points of unfiltered air into the system. A Cherry-Burrell system requires careful inspection because its design has many potential sites for the entrance of unfiltered air. Make recommendations as appropriate.

Item H19—Product Fans & Ducts (58.221).

See the guidelines for Item D24—Product Removal and Conveying Equip.

Note:

> If you make recommendations about fans or ducts, indicate their location in the instantizing system. Many systems do not have product fans and ducts between the redryer and the cooler. The redried product often enters a cooling section within the same fluid bed or is dropped by gravity into a separate fluid bed cooling unit.

Item H20—Dust Control (58.211, 58.230).

See the guidelines for Item G6—Dust Control.

Item H21—Housekeeping (58.126e, 58.127f, 58.146d).

See the guidelines for Item A7—Housekeeping.

Product Cooling

Item H23—Room Construction (58.126).

See the guidelines for Item A1—Room Construction.

Item H24—Lighting & Ventilation (58.126d, e).

See the guidelines for Item A2—Lighting & Ventilation.

Item H25—Cooling Air Filters & Ducts (58.222, 58.223).

In most systems, the dry instantized product is cooled by cold air in fluid bed style equipment (see the guidelines for Item H17—Product Redrying Equipment).

Inspect the air filters, conveying fans, and ducts for compliance with the *3-A Accepted Practices for Instantizing Systems for Dry Milk and Dry Milk Products, Number 608-* . Use a strong flashlight to inspect the interior surfaces of filter housings and ducts. Check for gaps, openings, or improperly positioned filters that allow the entrance of unfiltered air into the system. Check cooling coils and condensate drains for proper construction and sanitation. Make recommendations as appropriate. Long air ducts shall be constructed to allow easy access for cleaning and inspection.

Ducts utilizing Morris style clamps are acceptable provided that every clamp is taken apart when the duct systems are wet washed.

Check for badly dented conditions on the cooling components which may cause difficulty in cleaning. The use of tape to seal cracks, and improperly gasketed or misaligned joints in product or air ducts are unacceptable. When these conditions are observed, recommend repair or replacement.

Item H26—Product Cooling Equipment (58.222, 58.223).

Systems may utilize the air within the plant, external air, or air which has been mechanically cooled to cool the product.

To improve cooling efficiency, most systems use chilled water or mechanical refrigeration to cool the air supply. These air cooling units usually have coil and fin type construction which may be very difficult to clean. Remove the air inlet filters and any access doors so that both sides of the coils can be inspected. If the coils are dirty, recommend cleaning. Try to determine why they are dirty (improper placement or missing filters, entrance of unfiltered air, back draft of product, etc.) and make recommendations as appropriate. Dirty cooling systems are a potential source of Listeria or Salmonella bacteria contamination and should be considered a critical control point.

Condensate drains from the mechanical refrigeration coils shall be properly trapped and directed to a sanitary sewer. Sewer connections are to be designed to be protected from negative pressures which could result in drawing air from the sewer into the cooling air stream.

Item H27—Fines Collectors & Handling (58.128a, 58.221, 58.223).

Systems that collect fines for animal feed do not require further inspection but check that the containers are properly labeled and that the fines do not create sanitation problems in the plant.

Only instantizing systems that are completely enclosed or which are designed and operated to control air flows and prevent the entrance of unfiltered air may reclaim fines for human food use.

Evaluate all parts of the instantizing system to determine if the fines may be reclaimed as human food. If unsatisfactory conditions exist and the fines are being reclaimed as human food, recommend that the operation be discontinued immediately and recommend the INELIGIBLE status.

Since the fines system handles only dry product, the related piping and ducts do not require frequent wet cleaning. Because the rest of the system is wet cleaned regularly, there must be some means of keeping the fines section of the system from getting wet. This can be done by making a physical break in the duct system. Check that the fines system is clean and free from evidence of condensate accumulation.

Fines are often immediately mixed with base product and subjected to rewetting as recycled product. This is a satisfactory practice if the fines are properly collected and handled.

Item H28—Product Sizing Equipment (58.223).

Single pass instantizing systems generally do not use any specialized sizing equipment other than conventional sifters. Agglomerated products may require some method of size reduction to break up the large clumps of product. Depending on the systems design, the sizing equipment may be a hammermill, a rotary mill, or sizing rolls.

Hammermills or rotary mills shall comply with the requirements of the *USDA Equipment Guidelines*. Follow the guidelines for Item A3—Pumps, Pipelines, & Valves if the equipment is not on the *Accepted Equipment List*.

Inspect the sizing rolls for sanitation and maintenance. The rolls shall be smoothly surfaced and be free of nicks, scratches or gouges. Bearing assemblies and adjustment screws shall be located outside of the product zone. Check that covers are tight fitting and prevent the entrance of unfiltered air. Check the rolls for cracks. If deficiencies are noted, make the appropriate recommendations.

Item H29—Sifter (58.224, 58.246).

See the guidelines for Item D37—Sifter.

In many operations, the sifter is located prior to the sizing rolls so that only oversize product is directed to the rolls.

Item H30—Handling of Oversized Product (58.223).

The objective of the agglomeration process is to clump dry particles together to improve their wetability. It is therefore common to end up with some oversized clumps when the agglomerated products are passed through a screening process. Unlike traditional "tailings" from other dry products sifters, oversized products from instantizing systems can be used for human food, provided that these particles are not excessively scorched, "off grade," unwholesome, or mixed with extraneous materials. Generally these oversized products are directed to sizing rolls or some other size reduction equipment.

If collection containers are used for the oversized product, check that they are clean, that the products are protected from contamination from unfiltered air or other contaminants, and are not mixed with any "not-for-human-food" materials. All collection containers must be properly labeled. If contamination of the oversized product is noted, recommend disposal of the oversized product. If this is not done, recommend the INELIGIBLE status (category A deficiency).

Item H31—Housekeeping (58.126e, 58.127f, 58.146d).

See the guidelines for Item A7—Housekeeping.

Packaging

Item H33—Room Construction (58.126, 58.212, 58.213).

See the guidelines for Item D34—Room Construction.

Item H34—Lighting & Ventilation (58.126d, e).

See the guidelines for Item A2—Lighting & Ventilation.

Item H35—Dust Control (58.211, 58.230).

See the guidelines for Item D36—Dust Control.

Item H36—Product Hoppers & Fillers (58.151, 58.229).

See the guidelines for Item G24—Packaging Machine.

Hoppers which are not an integral part of a packaging machine shall also be of sanitary construction. They shall be fitted with tight covers to protect the product from contamination. External vibratory accessories may be attached to the hopper to assist in product flow. Any internal component of the hopper shall be of sanitary design. Check the hopper for cleanliness and dry conditions. Dry-product hoppers do not require daily wet cleaning. Their product contact surfaces may be dusty but shall be free of encrusted product buildup or evidence of wet product. If unsatisfactory conditions are observed, recommend that the hopper and filler be completely disassembled, and wet cleaned. It must then be thoroughly dried before it is reassembled and used again.

Item H37—Conveyors, Scales, Vibrators (58.128a, m, 58.241).

See the guidelines for Item G25—Conveyors, Scales, Vibrators.

Item H38—Product Packaging Temp. _____ ° F (58.240).

See the guidelines for Item D41—Product Packaging Temp. _____ ° F.

Item H39—Container Make-up (58.241a, b, 58.150, 58.151, 58.152).

Empty containers shall be protected from contamination at all times. Containers that are to be lined, shall not be prepared more than an hour before filling. Except for cleanable bulk containers, containers shall not be used again. Bulk container liners shall not be reused.

Unused containers and over wrap shall be properly protected from contamination in the packaging room. These packaging items shall be kept in boxes to prevent dust and debris from

collecting on them. These boxes shall be properly identified to guard against packaging products in mislabeled containers.

Check that the container-forming equipment protects the container's product contact surfaces from contamination. The forming equipment shall be relatively clean, free from grease, oil, or accumulations of paperboard lint. Check that the forming operation does not produce airborne paperboard lint that will contaminate the packaging room.

Item H40—Sealing Equipment (58.128, 58.150, 58.151).

See the guidelines for Item G26—Sealing Equipment.

Item H41—Packaging Workmanship (58.241).

See the guidelines for Item G27—Packaging Workmanship.

Item H42—Vacuum Cleaner (58.230).

See the guidelines for Item D30—Vacuum Cleaner.

Item H43—Facilities to Clean Equipment (58.128a, 58.146a, 58.246).

See the guidelines for Item G28—Facilities to Clean Equipment.

Item H44—Reclaim Product Handling (58.152, 58.241, 58.242).

See the guidelines for Item A34—Sanitary Practices.

Deformed, improperly filled, or improperly sealed containers are often encountered during packaging start-up or during switch-overs to different packaging styles, sizes or products. The reclamation of these products should not be criticized provided that the product is collected and maintained in a sanitary and wholesome manner.

When improper handling, labeling or processing of reclaimed products is observed, make appropriate recommendations. Depending on the seriousness of the deficiency, the INELIGIBLE status may be appropriate.

Item H45—Waste Product Handling (58.127f, 58.241c).

See the guidelines for Item D43—Waste Products Handling.

Item H46—Housekeeping (58.126e, 58.127f, 58.146d).

See the guidelines for Item A7—Housekeeping.

Product Storage

Item H48—Room Construction - Warehouse (58.126, 58.210, 58.241d).

See the guidelines for Item D46—Room Construction - Warehouse.

Item H49—Lighting & Ventilation (58.126d, e).

See the guidelines for Item B54—Lighting & Ventilation.

Item H50—Housekeeping (58.126e, 58.127f, 58.146d).

See the guidelines for Item D48—Housekeeping.

General Items

See the guidelines for Page A — General Items