

Good Handling Practices for Wood Packaging Food and Pharmaceutical Industries

➤ **Draft Document** ◀

Goal of NWPCA/FDA Meeting

Establish the foundation for forming a coalition of industry representatives from the food and pharmaceutical supply chains and government agencies to identify prevention-based *Pallet Handling Risks* and *Hazard Control Points* as part of a comprehensive approach to *Good Handling Practices* for wood packaging in the food and pharmaceutical industries.

Introduction

Wood is an organic product that has been used safely in the food industry for centuries. Wood has not only evidenced it is a safe, efficient, cost-effective material for pallets and containers used to transport food and pharmaceutical products, but also as an actual component of some food products; consider for example the wood sticks used in ice cream bars, popsicles, and corn dogs. The wood used is strong, smooth and absent of flavor that might compete with the taste of the food.

Wood likewise remains a favored material in kitchens, dining areas, hospitals and clinics throughout the United States. Such products as cutting boards, rolling pins, serving spoons, salad tongs, barbeque skewers, chopsticks and tongue depressors are made from wood.

These products are made from a variety of wood species, both hardwood and softwood. Leading species for wood spoons include walnut, oak, Indian rosewood, birch, pine, cherry and fir. For chopsticks tropical hardwoods and virgin softwood fibers are the primary species used.

Wood pallets have been used safely for more than 65 years, and have consistently afforded the food and pharmaceutical industries a secure, cost-effective option for moving goods. Wood pallets have a long history of reliable use from farm to market.

Wood is a natural material and some species have profound abilities to contain bacteria away from the surface. The following quotes are from research conducted by Dean O. Cliver, Ph.D at the University of California at Davis comparing wood and plastic cutting boards.

Our safety concern was that bacteria such as Escherichia coli O157:H7 and Salmonella, which might contaminate a work surface when raw meat was being prepared, ought not remain on the surface to contaminate other foods that might be eaten without further cooking. We soon found that disease bacteria such as these were not recoverable from wooden surfaces in a short time after they were applied, unless very large numbers were used. New plastic surfaces allowed the bacteria to persist, but were easily cleaned and disinfected. However, wooden boards that had been used and had many knife cuts acted almost the same as new wood, whereas plastic surfaces that were knife-scarred were impossible to clean and disinfect manually, especially when food residues such as chicken fat were present. Scanning electron micrographs revealed highly significant damage to plastic surfaces from knife cuts.

*Although the **bacteria that have disappeared from the wood surfaces are found alive inside the wood for some time after application, they evidently do not multiply, and they gradually die.** They can be detected only by splitting or gouging the wood or by forcing water completely through from one surface to the other. If a sharp knife is used to cut into the work surfaces after used plastic or wood has been contaminated with bacteria and cleaned manually, more bacteria are recovered from a used plastic surface than from a used wood surface.*

The inherent properties of wood lend themselves to producing clean, hygienic pallets. In creating a safe, clean “Field-to-Fork” food and pharmaceutical distribution model, all materials need to be considered from the perspective of handling, transport and storage. Any item, including glass, fabric, plastic, rubber, metal, corrugated, or wood can get surface mold, mildew, or bacteria either from prolonged exposure to ideal heat and moisture conditions, or by contact contamination.

Pallets, no matter what the material, are part of the material handling equipment like fork lifts, hand trucks, hydraulic lift tables, scales, loading dock floors, warehouse racks, conveyors, truck beds, train cars and intermodal containers. All of these are part of the supply chain, but they rarely come into contact with food. Approximately 87 to 92 percent of produce, manufactured food and pharmaceuticals are contained in bags, corrugated boxes or plastic packaging so that the product does not have direct contact with tertiary packaging material. In other cases, isolation or other preventive measures are used to protect products from potential food and drug safety hazards.

The responsibility for the safety of food and pharmaceutical products should remain with food and pharmaceutical producers, product manufacturing companies, distribution centers, and retailers. For example, a raw chicken can leak juice onto the check-out line conveyor belt. If the cashier does not clean the belt, the grapes, tomatoes or bananas that follow can be contaminated by the raw fluids no matter what happened during the distribution journey from the farm to the retail store. Consumer care starts with the retail store policies that are passed down through management to staff.

Similarly, food growers and pharmaceutical manufacturers should have policies and procedures in place to assure safe handling throughout the distribution process. Accordingly, in order to ensure that pallets are clean and of good quality and in compliance with customary good manufacturing and distribution practices, we propose the following recommendations to guide food handlers in the supply chain.

The wood pallet and container industry has established a preliminary guideline for the food and pharmaceutical industries, but we need to support our conclusions and recommendations with knowledge from practitioners in those industries. NWPCA proposes FDA form a coalition of industry representatives from the food and pharmaceutical supply chains to identify prevention-based Pallet Handling Risks and Hazard Control Points as part of a comprehensive approach to *Good Handling Practices* for wood packaging in the food and pharmaceutical industries.

Good Handling Practices – Principles and Recommendations

Guiding Principle I Manufacturing Clean Safe Pallets

The industry produced more than 400 million new pallets in 2006. It is recommended the following procedures be implemented by new pallet manufacturers that serve the food and pharmaceutical industries:

- Source(s) of raw materials (lumber, fasteners) should be identified (local or imported from other countries) and properly handled prior to manufacture. Certain wood preservatives or fungicides (e.g. tribromophenol/TBP, trichlorophenol/TCP, pentachlorophenol/PCP) must not be used to treat against mold or present in the lumber components.
- Pallet components (i.e. deckboards, stringerboards, stringers, blocks) should be properly handled during the manufacture process (cutting into size, assembly)
- 100% inspection of new pallets and containers. Exposed nails/shiners and broken boards must be rejected.

Moisture in wood as it pertains to mold growth and product contamination is an issue for new hardwood pallets. Most, if not all, hardwood pallets are assembled using “green” (above 30% moisture content) components. Since lowering the moisture content down to 19-25% requires time and energy, hence added cost, an alternative is to use softwood pallets since the lumber components are kiln-dried to 19%.

Guiding Principle II Handling/Sortation Practices for Reused, Repaired, Remanufactured Pallets

The wood pallet industry also process about 300 million recycled pallets annually. Recycled pallets can be considered as used, repaired (replaced a component) or remanufactured (disassembled and reassembled using new and/or recycled components). Accordingly the following handling guidelines are recommended for pallet recyclers:

- Incoming pallets should be inspected, sorted then processed (i.e repaired, disassembled or discarded). During repair, disassembly or assembly, the recycled pallets will be inspected as they go through the processing line.
- Contaminated pallets are set aside for cleaning (e.g. power washing)

Recycled pallets, regardless if it is hardwood or softwood, have moisture content less than 15% which prevents or practically eliminates mold growth unless the wood surface is rewetted. The major issue with recycled pallets is no one can tell where a pallet or its components came from (in terms of country origin or the industry in which it was previously used).

Guiding Principle III Cleanliness Standards for New & Recycled Pallets

It is highly recommended that both new and recycled pallets be “household clean” which means they are free of any foreign material (e.g. dirt, debris). Visible mold growth and/or blood should be removed by washing with a mild detergent.

Pallet cleaning is done through these steps: full wash, rinse then dry. Power washing/jet spray is the preferred washing procedure. The rinse and dry steps can be accomplished by air blades, forced air drying or air drying.

Guiding Principle IV Storage and Handling for Warehouses, Distribution Centers, Retailers

It is strongly recommended that pallets be maintained in a dry atmosphere. Indoor storage is the preferred method and damp and cold storage should be avoided. All pallets that have been stored outdoors must be reinspected prior to shipment/delivery at all times. Pest mitigation procedures should be coordinated with pest control service providers.

Guiding Principle V Shipping New & Recycled Pallets

Pallet providers should use clean trailers and flat beds for deliveries to avoid contamination of pallets. The “No daylight” rule for containers will be enforced. Trailers are immediately pulled from the dock and should be sealed after loading to secure the cargo. Records for every outbound trailer must be kept and maintained including:

- Date of loading, and time of departure
- Quantity of pallets
- Forktruck operator and truck driver
- Destination

Appendix

Standards for the United Fresh Produce Association

The United Fresh Produce Association (United Fresh) published its harmonized standards for both in-field operations, harvesting and field packing, and for post-harvest operations. The Produce Good Agriculture Practice (GAPS) standards have the following provisions for wood packaging:

- Food-contact totes, bins, packing materials, other harvest containers, and pallets shall be visually inspected, clean, intact and free of any foreign materials prior to use. Containers shall be sufficiently maintained so as not to become a source of contamination.
- The types and construction of harvest containers and packing materials shall be appropriate to the commodity being harvested and suited for their intended purpose.
- Food-contact totes, bins and other harvest containers designated for harvesting shall not be used for other purposes unless clearly marked or labeled for that purpose.
- Pallets shall be kept clean and in good condition as appropriate for their intended use. Operation inspects pallets prior to use for conditions that may be a source of produce contamination. Pallets that are not cleanable are removed from use. Pallets and other wooden surfaces are properly dried after being washed.

Standards for the Safe Quality Institute

The Safe Quality Food Institute (SQFI) has two standards namely:

- SQF 1000 Code - A HACCP-Based Supplier Assurance Code for the Primary Producer
- SQF 2000 Code - A HACCP-Based Supplier Assurance Code for the Food manufacturing and Distributing Industries

SQF 1000 mandates that “particular care shall be taken to prevent packaging becoming a harborage for rats, mice and vermin.” SQF 2000 requires wood pallets “used in food handling/contact zones shall be dedicated for that purpose, clean, maintained in good order and their condition subject to regular inspection.”

In April 30, 2010, the Food and Drug Administration published an advance notice of proposed rulemaking (ANPR) to request data and information on the food transportation industry and its practices. The ANPR is a part of the implementation of the Sanitary Food Transportation Act of 2005 (2005 SFTA), which requires issuance of regulations setting forth sanitary transportation practices. The ANPR cited “*appropriate packaging/packing of food products and transportation units (e.g. good quality pallets, correct use of packing materials)*” as one of seven preventive controls with the broadest applicability across all food sectors and modes of transport.

Based on existing guidelines implemented by the food industry (e.g. United Fresh and SQFI) and pharmaceutical companies (e.g. J&J, McNeil Consumer Healthcare), the wood packaging industry is presenting the Best Handling Practices that need to be adopted by the industry as well as end-users in order to assure that food and pharmaceutical products on transport packaging are properly handled, stored and transported.