

GUIDANCE FOR ALTERNATIVE CRT CONTAINER METHODS

April 6, 2012

The Maine Hazardous Waste Management Rules, 06-096 CMR 850, Section 3.A(13)(e)(xxii)(a), (the Rules), allows generators and consolidators to propose an alternative method for acceptable CRT storage. The Department is providing the following guidance for generators and consolidators for the storage and packing of CRTs. The storage and packing methods provided below are acceptable alternative container methods that may be utilized for the storage and movement of CRTs in addition to the method identified in the Rules. The standards for storage and packing contained in other sections of the Rules are still applicable except where replaced by these alternative methods or other acceptable container methods approved by the Department on a case by case basis.

The Rules require that all cathode ray tube (CRT) containing equipment, including televisions and computer monitors, must be handled in a way that prevents breakage or releases of lead and cadmium and any universal waste or components of universal waste to the environment. The intent of these alternative container methods is to enhance this goal and make it easier to safely move heavy and bulky items. Excessive breakage may however require a review by the generator and the Department on a case by case basis to assess the ability to manage intact CRTs under this alternative and may warrant additional modification to prevent breakage of the CRTs.

I. BROKEN CRT HANDLING

All CRTs that show evidence of breakage, leakage, spillage or damage that could cause leakage including the release of glass and/or lead particles under reasonably foreseeable conditions must be placed in a structurally sound, sealed and labeled container, in accordance with the universal waste rules. Such storage containers may include heavy cardboard boxes with a sealed plastic liner or an equivalent closed plastic or metal container. **The below alternative container methods are not to be used for broken CRTs.**

II. STORAGE/PREPARATION FOR SHIPPING

To be eligible for use of these alternative container methods, all CRT containing equipment must be stored and packaged to comply with all the specifications of one of the four specific methods outlined below.

A. PACKING IN GAYLORDS (Gaylord boxes are durable cardboard boxes that usually measure 64 cubic feet):

- Place CRTs in layers in the box so that each layer of CRTs is of similar height.
- Pack CRTs tightly to prevent shifting and/or use cardboard inserts or other packing aids to minimize a chance of breakage.
- Do not overfill the Gaylord, the top of the uppermost CRTs must not be higher than the top of the Gaylord sides.
- Cover the Gaylord, seal and label each Gaylord.
- For the purposes of this option, the cover may be placed on the Gaylord when full or when no further items are to be placed in the Gaylord.
- If the gaylord has flaps, the flaps may be positioned up to provide added structural height and tightly wrapped with heavy stretch wrap plastic of at least 80 gauge to secure and seal the outside sides of the gaylord. If extending the box height in this manner, CRTs may be placed no more than 7 feet high. The material must be secure at all times within the box.

If a particularly large and/or bulky CRT must be packed into a Gaylord by hand and there is a concern about worker stress injury, one or more of the following packing options may be used.

- Place the largest of the CRTs in the corners of the Gaylord or around the inside perimeter and place smaller CRTs in the space remaining in the middle.

- Use additional people or equipment (hoist, boom, forklift etc.) to help with the lifting and placement of CRTs.
- Cut an opening in one of the vertical sides of the Gaylord sufficient to facilitate access into the interior of the Gaylord but in such a way that all four corners of the Gaylord remain intact and there is still at least a 6 inch or larger lip of cardboard extending up from the Gaylord bottom on that side. Secure with suitable packing tape the cut section to the side as soon as this additional access is not required. Further secure the sides and top of the cut Gaylord for shipping by tightly wrapping it with heavy stretch wrap plastic of sufficient tightness and strength to secure and seal the outside sides of the Gaylord but in no case less than 80 gauge stretch wrap.
- Cover the Gaylord, seal and label each Gaylord.
- For the purposes of this option, the cover may be placed on the Gaylord when full or when no further items are to be placed in the Gaylord
- For the purposes of this option, the Gaylord will be considered structurally sound if stretch wrap is applied to the Gaylord in accordance with the above criteria.

B. PACKING CRTs ON PALLETS

Boxed CRTs must be placed on pallets so that:

- All boxed CRTs are within the perimeter of the pallet.
- Each level on the pallet is made of boxed CRTs of equal height.
- No box leans away from the center of the pallet or presents a hazard of falling from the pallet.
- The top of each level of boxed CRTs, if not sufficiently flat, is covered by a layer of flattened cardboard and shimmed so that the next layer is stable and flat.
- The total pallet of boxed CRTs shall be arranged and secured so that the pallet acts as a stable integrated whole by tightly applying stretch wrap plastic of a minimum of 80 gauge around the boxes and to the pallet.
- Label each pallet.
- **Boxed CRTs may be stacked up to 7 feet high on each pallet.**

Unbroken and unboxed CRTs may be placed on pallets for shipping if **all** of the following requirements are met:

- Flattened cardboard is used to cover the pallet and act as a base upon which CRTs are placed.
- Each layer of CRTs shall have a flattened cardboard insert between it and the next layer.
- Each CRT must be packed with cardboard against the glass face.
- Apply tight, 80 gauge minimum stretch wrap plastic **as each layer is built.**
- When a pallet is finished, tightly apply at least one additional layer of stretch wrap plastic to the pallet to insure stability and so that the load is secured to the pallet and that the pallet acts as a stable integrated whole.
- If the CRTs on the pallet do not look and feel stable, deconstruct and rebuild the stack or reduce the stack height until the CRTs are stable.
- Place a cardboard cover on top, stretch wrap and label each pallet.
- For the purposes of this option, the cover may be placed on the pallet when full or when no further items are to be placed on the pallet.
- **Unboxed CRTs may be stacked up to 7 feet high on each pallet.**

Note: Methods to increase vertical stability may include the following:

- *Place CRTs of similar height in a layer for stable stacking. If this is not possible, insure that the largest CRTs are of similar size and are placed at the 4 corners of each layer.*
- *CRTs may be placed glass side down on the cardboard inserts if this improves CRT and layer stability.*

- *Insure that each CRT is placed within the perimeter of the pallet and does not lean away from the center of the pallet. Keep all corners straight and vertical as layers are added.*
- *Fold pieces of cardboard around each corner of the pallet to reinforce corners.*
- *Corner reinforcements/stiffeners should be positioned once one layer of CRTs is placed on the pallet. As soon as the first layer of CRTs has been constructed, secure the stiffeners by applying tight, 80 gauge minimum stretch wrap around the layer and the pallet starting at the bottom of the pallet. These stiffeners should extend at least 10 inches above the top of the second layer.*
- *Increase gauge of the stretch wrap if 80 gauge wrap is insufficient to hold the load together and on the pallet.*

C. PACKING CONSOLE TVs ON PALLETS

The following alternative container method is for handling "television consoles". For the purpose of this document, a "console" means a television CRT housed in a furniture cabinet, the whole unit being designed to be placed on the floor. Typically, TV consoles are wider than they are high or deep.

Television consoles must be placed on pallets in accordance with the following standards.

- If there are feet or legs attached to the bottom of the console cabinet these may be removed prior to placement of the console on a pallet.
- Place flattened cardboard on the pallet to act as a floor beneath the TV consoles.
- Place two upright console TVs on the pallet with the CRT fronts facing inward toward the middle of the pallet.
- Place vertical flattened cardboard between the CRT faces.
- Place flattened cardboard on top of the first layer and place two more consoles upright and still facing inward and together for a secure load. It is recommended that the second layer be at 90 degrees to the first layer to increase load stability.
- The pallet of console TVs shall be arranged and secured so that the pallet acts as a stable integrated whole by tightly applying stretch wrap of a minimum of 80 gauge to the pallet and wrap the first layer very tightly with 3 or 4 layers of stretch wrap before proceeding to wrap several more times upward.
- Place a cardboard cover on top, stretch wrap and label each pallet.
- For the purposes of this option, the cover may be placed on the pallet when full or when no further items are to be placed on the pallet.
- **For the purposes of this option, because of the size and weight of most consoles, no more than two layers of consoles shall be placed on a pallet although this may be slightly more than five feet in height.**

D. STORING CRTs ON SHELVING

The following alternative container method is for storing CRTs on shelving structures prior to being placed in a container or in one of the other Department approved alternative container methods.

Non boxed CRTs may be stored on shelves provided that:

- Shelving is of adequate size and construction to support the load without structural malfunction. Shelving is suggested to be bolted to the wall but is not necessary if shelving is secure.
- Label each CRT on the shelving.
- Each CRT must be properly containerized prior to shipping.
- **The top shelf used to store CRTs may be no higher than five feet off the floor. Unless the facility has a portable staircase or stable ladder to safely and securely access the shelving when placing, inspecting, and removing CRTs.**