Memo to File: Cleaning Recommendations for Products Made of Rigid Plastic, Coated Flexible Foam, or UltraFoam

The following cleaning and decontamination materials are known to be compatible with medical devices made of coated-flexible-foam and UltraFoam materials and rigid formed plastics, including rigid parts reinforced with carbon fiber or glass fiber:

1. Rubbing alcohol (70% isopropyl alcohol).
2. Bleach solution (10% household-type bleach in cold, cool or warm water).
3. General-purpose soap or detergent-type cleaners ("409", etc.) at their normal manufacturer-recommended strength.
4. Pre-moistened “wipes” containing a disinfectant/cleaner, such as “Cavi-Wipes” or “Sporicidin” wipes.
5. Aerosol disinfectant/cleaner materials such as Lysol spray.

<u>Avoid</u> the following types of materials for cleaning:

1. Detergent cleaners/disinfectants that also contain hydrocarbon solvents such as butyl acetate, acetone, etc., which can dissolve plastic materials. Such cleaners are sometimes described as being intended for removal of graffiti, or heavy degreasing.
2. Ammonia solutions, which can cause some plastics to turn greenish.
3. Detergent-type cleaners at abnormally high concentrations (i.e. concentrated cleaners, intended to be used in diluted form, that instead are used in undiluted, concentrated form).
4. Steam.
5. Water or other cleaning materials at temperatures higher than 150°F.
6. Glutaraldehyde liquid sterilant, and other materials that have a similar intended use.
7. Acids of any kind.
8. Rough brushes, aggressive scrubbers, sharp objects, and abrasive materials.
9. Iodine solutions, such as “Betadine”. Incidental contact with these materials during clinical use generally will not stain flexible medical coatings if wiped away promptly. Their use in broad-area cleaning, however, is not recommended because it is prudent to avoid their extreme staining power.

The most common clinical contaminants, i.e. skin oils, blood, urine, vomit, feces, contrast medium, etc., are cleanable from patient contact surfaces of coated-flexible-foam, UltraFoam and rigid formed plastic products using general-purpose soap- or detergent-type cleaners ("409", etc.) at their normal manufacturer-recommended strength. If needed, rinse with clear water (temperature no higher than 150°F) to remove gross

contamination before applying the cleaner. Dried contamination may need to be kept moist for an extended period to re-hydrate the contaminant material before cleaning.

Avoid vigorous scrubbing, stiff brushes, sharp objects such as knives and scrapers, abrasive cleansers, abrasive pads, steel wool, and similar cleaning methods that are capable of causing mechanical damage. Whenever possible, vomit and other aggressive contaminants should be wiped or washed off surfaces promptly so as to minimize the likelihood of permanent chemical-attack effects.

The simplest way to evaluate cleaning materials is to review their Material Safety Data Sheet to see if they are safe for incidental skin contact, safe for use on plastic surfaces, and non-flammable. Cleaning materials that are safe for incidental skin contact and are non-flammable, and do not have a label warning that they are not recommended for use on plastic materials, usually will be safe and effective.

Note however that the user is always responsible for carefully testing the cleaning material and method on a small non-critical area of the part to verify its suitability and effectiveness.

Note also that such cleaning materials must be used at a concentration no stronger than the manufacturer's recommendation.

Dried residue of Betadine on flexible coating surfaces typically can be wiped off using rubbing alcohol. Never try to scrub off dried Betadine using water-based cleaners. The use of Betadine on rigid plastics or UltraFoam is never recommended.

The elastomeric coatings used on flexible foam parts by and other sources are made flexible by the addition of a special "plasticizer" during their original formulation. These plasticizers are generally able to withstand regular wipe-down cleaning with conventional detergent cleaning solutions in their manufacturer- recommended diluted form. However, plasticizers can be gradually “cleaned” out of the product if the cleaning materials are excessively concentrated or too hot, or if they contain solvents. Such plasticizer removal will gradually, permanently alter a foam coating's flexibility.

Product components based on textiles, i.e. straps, fabric-covered table pads, hook-and-loop fasteners, etc., generally are not intended for hospital-type automatic washing. The special characteristics of imaging-optimized fabrics and construction methods are not compatible with the high temperatures and extreme mechanical and chemical environment of such washing processes. Instead, contamination of such products should be removed by hand cleaning to retain the products’ imaging performance.

A flexible foam or UltraFoam product that has a tear, puncture, cut or other breach of the coating material may be susceptible to penetration of either contaminants or contaminant-carrying cleaning fluids through that breach and into the product. Such fluid penetration also could occur through the pressure-equalization vent that must be incorporated into some types of flexible-coated-foam positioners. Such contaminants then might flow out of the product during subsequent use, resulting in contaminant contact with a patient, clinical personnel, equipment, etc. For this reason, recommends that coated foam products with breached coating, or UltraFoam products with a tear or penetration, should be taken out of service immediately and replaced.

Note also that flexible foam and UltraFoam products with breached coating that have absorbed contaminants or cleaning materials may subsequently artifact unpredictably in diagnostic imaging procedures, including R & F X-ray, CT, MR and others.

It is prudent to avoid use of immersion and automatic-high-volume-spray cleaning processes for all types of foam patient positioners, as to avoid the risk of fluid penetration or excessive plasticizer removal.