RECOMMENDED PROCEDURES FOR MANAGING BLOOD SPILLS AND TRAUMA SCENES

BIOHAZARD
I. **INTRODUCTION**

These procedures have been developed by Environmental Health & Safety (EHS) to assist University employees and contractors to safely respond to non-research laboratory related human blood spills, spills of other potentially infectious materials (OPIM) and crime or trauma scenes on University property and in University vehicles. **For research laboratory related spills, contact EHS immediately.**

Any questions about these procedures should be directed to EHS at (410) 704-2949.

Blood, OPIM spills, and crime or trauma scenes that occur indoors, in University vehicles or in the outside environment must be immediately decontaminated to prevent the potential transmission of communicable disease. The circumstances associated with these events can vary greatly depending on the source, the volume and the type of contact surface. A small amount of blood, if splashed, can cover a large surface area. A large volume, if undisturbed on a flat surface, can pool in a relatively small area. **Because of the unpredictable nature of spills and the various volumes, each incident must be quickly and carefully evaluated by a designated and trained individual (i.e. EHS or a trained Housekeeping Supervisor) for potential risks to cleanup personnel and the environment.**

A minimum of two (2) trained individuals are required to safely perform these procedures at all times.

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**Blood, OPIM spill and crime/trauma scene clean-up should only be performed** by trained employees who are current with their annual OSHA Bloodborne Pathogens training and have appropriate personal protective equipment (PPE) and clean up materials.

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**Immediately contact EHS during normal business hours at (410) 704-2949 or through TUPD after duty hours, on weekends or holidays for assistance in managing large spills, crime or trauma scenes.**
**DO NOT** attempt to begin decontamination if the size or complexity of the contamination is beyond the capacity of immediately available campus resources. If, at any time, the cleanup or decontamination exceeds available resources:

- Physically (and visually, if required) isolate the area with barrier tape or other warning materials
- Restrict all entry
- Immediately contact EHS for assistance

**II. DEFINITIONS**

**Antiseptic:** Destroy microorganisms on living tissue.

**Biohazardous Waste:** Any waste material contaminated with blood or other potentially infectious material (OPIM).

**Blood:** Human blood, human blood components, and products made from human blood. (Also See **Feminine Hygiene Products**.)

**Bloodborne Pathogens:** Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

**Contaminated:** The presence or the reasonably anticipated presence of blood or OPIM on an item or surface.

**Decontamination:** The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

**Disinfectant:** Destroys microorganisms on inanimate objects.

**Feminine Hygiene Products:** OSHA has issued a letter stating that they do not include soiled sanitary napkins and other feminine hygiene products in the definition of regulated waste because they are designed so as to prevent the release of liquid or semi-liquid blood or the flaking off of dried blood. Therefore, employees handling such wastes are not covered by the Bloodborne Pathogens Rule solely due to that duty. However, OSHA does expect that containers for soiled sanitary products be lined with a plastic or wax paper bag and that employees will be provided suitable gloves for removal of the bags from the waste container.
**Micro-Encapsulation Absorbent**: A dry material that rapidly converts a liquid into a solid. This material greatly simplifies blood spill clean-up and can be obtained through any lab safety vendor.

**Other Potentially Infectious Materials (OPIM):**
- The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids. Feces and urine are only potentially infectious if visibly contaminated with blood;
- Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and,
- HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

**Personal Protective Equipment (PPE)**: Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) are not intended to function as protection against a hazard are not considered to be PPE. Examples of PPE are: safety glasses, splash goggles, disposable gloves, respirators, disposable coveralls, and disposable shoe covers.

**Regulated Waste/Special Medical Waste (SMW)**: Liquid or semi-liquid blood or OPIMs; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

**Sanitizing**: Reduces the number of surface microbes to an acceptable level.

**Sharps**: Any object contaminated by blood or other potentially infectious material that can cut or penetrate human skin including, but not limited to:
- Broken glass
- Capillary tubes
- Knives, razors, etc.
- Needles
- Surgical instruments
- Syringes with attached needles
**Sharps Container:** A leak and puncture proof container capable of being tightly closed that is red and is labeled with the word “Biohazard” and the biohazard symbol. Filled sharps containers are regulated for disposal and must be disposed of through Dowell Health Center and **NOT** as domestic waste.

**Source Individual:** Any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.

**Spill:** Any unintentional release of human blood, OPIM and/or tissue into a non-controlled environment.

- **Small Spill:** A volume that is easily managed with a minimal amount of decontamination equipment and materials.
- **Large Spill:** A volume that would require more than one person, large amounts of decontamination equipment and material, and/or contamination of objects that would prove difficult to decontaminate, (i.e., a large area blood splatter, carpeting, rugs, mattresses, furniture, electronic gear).
- **Major Spill:** Large amounts of blood and/or tissue (usually as a result of a homicide or suicide).

**Sterilization:** Kills all surface microbes.

**Trained Personnel:** An individual who has successfully completed Bloodborne Pathogens (BBP) training in accordance with OSHA 29 CFR 1910.130(g) (2) in the last 365 days.

**Universal Precautions:** An approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.
III. RECOMMENDED SPILL SUPPLIES

a. Personal Protective Equipment (PPE):

As a minimum, the following PPE should be worn by clean-up personnel when responding to a blood, OPIM spill or a crime/trauma scene:

i. Two pair of disposable gloves
ii. Eye protection
   - Splash Shield; or,
   - Splash Goggles
iii. Protective clothing such as a lab coat or disposable coveralls
iv. Disposable shoe covers or rubber boots
v. N95 Disposable Respirator (If required)

b. Clean-up Materials:

i. A freshly prepared 3% solution of DuPont “RelyOn” multipurpose disinfectant cleaner; or, a freshly prepared (<24 hrs old) 10% bleach solution (1 part household bleach: 9 parts clean water); or, another EPA approved disinfectant.
   - When the spill is on carpeting or other fabric surfaces that can’t be disposed of, use an alternate EPA registered disinfectant that will not damage the fabric.
   - DO NOT use “RelyOn” or bleach on carpeting or other fabric surfaces unless carpeting or fabric covered surfaces will be disposed. These products will damage carpeting & fabrics.
ii. Spray bottles for applying disinfectant to small areas of contamination
iii. Garden pump sprayers for applying disinfectant to large contaminated areas
iv. Micro-encapsulated absorbent (kitty litter, diatomaceous earth or sorbent pads, etc.)
v. Mops & buckets
vi. Nylon scrub pads and brushes
vii. Paper towels or other appropriate cleaning material
viii. Red biohazard waste bags (large & small sizes) & fiber boxes
ix. Scrapers or putty knives
x. Box cutters or carpet knives for cutting out contaminated areas of fabrics and other porous materials.

xi. Bio-hazard warning signs and labels

xii. Leak-proof red biohazard sharps containers

xiii. Dustpan and brush and/or tongs/forceps for picking up contaminated sharps and/or human body parts or tissue.

xiv. Disinfectant liquid hand sanitizer or hand sanitizer wipes.

xv. Barrier Tape (“CAUTION - Do Not Enter”)

xvi. Duct Tape

xvii. Opaque 6-Mil polyethylene plastic sheeting for wrapping large contaminated objects and for use as a visual barrier, if required.

xviii. Other tools and materials as required.

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**If at any time there is an accidental blood or OPIM contact with unprotected skin, **immediately** wash the area with soap and water. If the exposure is on abraded skin, in the eyes, mouth or nose immediately notify your supervisor and follow procedures for reporting contained in the Towson University Bloodborne Pathogens Exposure Control Plan.**

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**IV. CLEAN-UP PROCEDURES**

**a. Indoor or Outdoor Spills**

- Identify and clearly mark all areas of suspected contamination with barrier tape or other warning materials.
- Immediately restrict all entry into the contaminated areas to avoid spreading contamination.

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To prevent additional contamination, **ALL** individuals who entered the area of contamination without appropriate PPE (i.e., Police, EMS, Maintenance, etc.) should remain in the immediate area until thoroughly inspected to ensure they have not been contaminated, especially footwear. Decontaminate as required or remove contaminated clothing and place into a red biohazard bag and give to owner.

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- Don appropriate PPE.
- As you enter the area, don’t step on any obvious contamination.
✓ Inspect the scene for:
  o Sharp objects such as glass, knives, needles etc., which may be contaminated with blood or OPIM. These items should be collected with tongs or forceps and placed into an appropriate puncture resistant sharps container.
  o Tissue or other small body parts. These should be collected with tongs or forceps and placed into an appropriate biohazard bag.
✓ Saturate the blood contaminated surfaces with a freshly prepared disinfectant solution using a garden sprayer or spray bottle. Allow at least 20 minutes disinfectant contact time for effective disinfection.
  o On hard surfaces, an approved micro-encapsulating agent may be applied to pooled blood or liquid OPIM so that the bulk of the contamination can be removed before disinfecting the surface.
  o Carpets, rugs, curtains, mattresses, pillows, furniture cushions, upholstery, cloth car seats and other fabrics saturated with blood or OPIM should be discarded and replaced.
    ▪ On large areas of fabric covered materials such as carpeting, upholstered furniture, etc., after thoroughly saturating contaminated areas with disinfectant, cut and remove all blood/OPIM contaminated sections and place into a red biohazard bag.

NEVER wash blood or other OPIM down a sewer or storm drain. These materials should be solidified with an appropriate micro-encapsulation absorbent and swept up and placed into a red plastic biohazard bag for disposal.

✓ Absorb and remove all traces of the spill with paper towels or other acceptable materials (Micro-encapsulation absorbent). Be careful not to contaminate the outside of the spray bottle.
✓ Use procedures to minimize any aerosolization of blood or contaminated items.
✓ Re-spray the cleaned area with the disinfectant solution and allow to air dry completely.
Place all waste materials, including used cleaning materials and disposable PPE, into a red plastic biohazard bag. Tightly seal with duct tape. Be careful not to contaminate the outside of the bag. Place the sealed biohazard bag into another biohazard bag and tightly seal (e.g., double-bag). Mattresses, rugs, and other large items that cannot fit into a biohazard bag should be tightly wrapped and sealed in 2 layers of 6-mil poly sheeting after being decontaminated. Place biohazard labels in multiple conspicuous locations.

- Non-disposable cleaning materials such as mops, nylon scrub pads and brushes, buckets, spray bottles and garden sprayers should be disinfected by saturating with bleach solution and air dried.
- Carpet/Upholstery Machine Hoses, Wands & Tanks
  - Mist or spray disinfectant solution into wand head while vacuum unit is running to decontaminate the interior surfaces of hoses and wands. Spray and wipe exterior wand and hose surfaces clean with disinfectant solution and allow to air dry.
  - Wastewater should be drained and disposed via the sanitary sewer system.
  - Waste tank surfaces should be decontaminated by spraying with disinfectant solution; wiped clean and re-spraying all interior surfaces with disinfectant solution and allowing to air dry.
- Once the scene has been decontaminated and the disinfectant has completely air dried, the area is safe for entry.
- Biohazardous waste is a regulated waste and must be disposed of in a controlled manner. See Section V. DISPOSAL OF CONTAMINATED MEDICAL WASTE below for proper biohazard waste disposal procedures.
- Wash hands and all exposed skin with soap and water when clean-up is complete. If soap and water are not immediately available, use an alcohol-based hand sanitizer.

After the area has been properly decontaminated and disinfected, thoroughly re-inspect the area for any residual or missed contamination. Re-decontaminate as necessary.
b. Towson University Vehicles

- Immediately take the vehicle out of service. Move or tow to a safe location for decontamination as necessary.
- Identify and clearly mark all contaminated areas.
- Restrict all entry into the contaminated vehicle to avoid spreading contamination.

| To prevent additional contamination, ALL individuals who entered the area of contamination without appropriate PPE (i.e., Police, EMS, Maintenance, etc.) should remain in the immediate area until thoroughly inspected to ensure they have not been contaminated, especially footwear. Decontaminate as required or remove contaminated clothing and place into a red biohazard bag and give to owner. |

- Don appropriate PPE.
- As you enter the vehicle, avoid any obvious contamination.
- Check the vehicle for:
  - Sharp objects such as glass, knives, needles etc., which may be contaminated with blood or OPIM. These items should be collected with tongs or forceps and placed into an appropriate puncture resistant sharps container.
  - Tissue or other small body parts. These should be collected with tongs or forceps and placed into an appropriate biohazard bag.
- Saturate the contaminated area with a freshly prepared (<24 hrs old) disinfectant solution and allow at least 20 minutes contact time.
  - On hard surfaces, an approved microencapsulating agent may be applied to pooled blood or liquid OPIM so that the bulk of the contamination can be removed before disinfecting the surface.
  - Fabric covered car seats or trim saturated with blood or OPIM should be removed, discarded and replaced.
Using paper towels or other appropriate cleaning materials, wipe up all visible contamination residue and dispose of in a small biohazard bag. Repeat as often as necessary.

Re-spray the cleaned area with the disinfectant solution and allow to air dry.

- Open vehicle windows to accelerate the drying process.
- If contamination has gotten into inaccessible areas of the vehicle, leave the vehicle out of service and contact EHS for guidance.

Place all waste materials, including used cleanup materials and disposable PPE, into a red plastic biohazard bag. Be careful not to contaminate the outside of the bag. Place the sealed biohazard bag into another biohazard bag and seal (e.g., double-bag).

- Non-disposable cleaning materials such as mops, nylon scrub pads and brushes, buckets, spray bottles and garden sprayers should be disinfected by saturating with bleach solution and air dried.
- Carpet/Upholstery Machine Hoses, Wands & Tanks
  - Mist or spray disinfectant solution into wand head while vacuum unit is running to decontaminate the interior surfaces of hoses and wands. Spray and wipe exterior wand and hose surfaces clean with disinfectant solution and allow to air dry.
  - Wastewater should be drained and disposed via the sanitary sewer system.
  - Waste tank surfaces should be decontaminated by spraying with disinfectant solution; wiped clean and re-spraying all interior surfaces with disinfectant solution and allowing to air dry.

Once the vehicle has been decontaminated and the disinfectant has completely air dried, the vehicle is safe and may be placed back in service.

Biohazardous waste is a regulated waste and must be disposed of in a controlled manner. See Section V. DISPOSAL OF CONTAMINATED MEDICAL WASTE below for proper biohazard waste disposal procedures.

Wash hands and all exposed skin with soap and water when clean-up is complete. If soap and water are not immediately available, use an alcohol-based hand sanitizer.

NEVER wash blood or other OPIM down a sewer or storm drain. These materials should be solidified with an appropriate micro-encapsulation absorbent and swept up and placed into a red plastic biohazard bag for disposal.
V. Crime or Suicide Trauma Scenes

If the scene has been designated as a “crime scene” by Police, decontamination will be restricted until such time as the official investigation has concluded. Check with the Police Incident Commander prior to entering the area to begin decontamination.

- Identify and clearly mark the areas of suspected contamination with barrier tape or other warning materials.
- Depending on the situation, it also may be necessary to visually isolate the contaminated area until such time as decontamination and clean-up have been completed.
- Restrict all entry into the contaminated areas to avoid spreading contamination.

To prevent additional contamination, ALL individuals who entered the area of contamination without appropriate PPE (i.e., Police, EMS, Maintenance, etc.) should remain in the immediate area until thoroughly inspected to ensure they have not been contaminated, especially footwear. Decontaminate as required or remove contaminated clothing and place into a red biohazard bag and give to owner.

- Don appropriate PPE.
  - Depending on the scope of the contamination, a disposable N-95 respirator may be required.
- As you enter the contaminated area, don’t step on any obvious contamination.
✓ Inspect the scene for:
  o Sharp objects such as glass, knives, needles etc., which may be contaminated with blood or OPIM. These items should be collected with tongs or forceps and placed into an appropriate puncture resistant sharps container.
  o Tissue or other small body parts. These should be collected with tongs or forceps and placed into an appropriate biohazard bag.

✓ Saturate the area with a freshly prepared disinfectant solution and allow at least 20 minutes contact time.
  o On hard surfaces, an approved microencapsulating agent may be applied to pooled blood or liquid OPIM so that the bulk of the contamination can be removed before disinfecting the surface.
  o Carpets, rugs, curtains, mattresses, pillows, furniture cushions, upholstery, cloth car seats and other fabrics saturated with blood or OPIM should be discarded and replaced.
    ▪ On large areas of fabric covered materials such as carpeting, upholstered furniture, etc., after thoroughly saturating contaminated areas with disinfectant, cut and remove all blood/OPIM contaminated sections and place into a red biohazard bag.

✓ Re-spray the cleaned area with the disinfectant solution and allow to air dry completely.

**NEVER wash blood or other OPIM down a sewer or storm drain. These materials should be solidified with an appropriate micro-encapsulation absorbent and swept up and placed into a red plastic biohazard bag for disposal.**
✓ Place all waste materials, including used cleanup materials and disposable PPE, into a red plastic biohazard bag. Be careful not to contaminate the outside of the bag. Place the sealed biohazard bag into another biohazard bag and seal (e.g., double-bag). Mattresses, rugs, and other large items that cannot fit into a biohazard bag should be tightly wrapped and sealed in 2 layers of 6-mil poly sheeting after being decontaminated. Place biohazard labels in multiple conspicuous locations.
  o Non-disposable cleaning materials such as mops, nylon scrub pads and brushes, buckets, spray bottles and garden sprayers should be disinfected by saturating with bleach solution and air dried.
  o Carpet/Upholstery Machine Hoses, Wands & Tanks
    ▪ Mist or spray disinfectant solution into wand head while vacuum unit is running to decontaminate the interior surfaces of hoses and wands. Spray and wipe exterior wand and hose surfaces clean with disinfectant solution and allowed to air dry.
    ▪ Wastewater should be drained and disposed via the sanitary sewer system.
    ▪ Waste tank surfaces should be decontaminated by spraying with disinfectant solution; wiped clean and re-spraying all interior surfaces with disinfectant solution and allowing to air dry.

✓ Biohazardous waste is a regulated waste and must be disposed of in a controlled manner. See Section V. DISPOSAL OF CONTAMINATED MEDICAL WASTE below for proper biohazard waste disposal procedures.
✓ Wash hands and all exposed skin with soap and water when clean-up is complete. If soap and water are not immediately available, use an alcohol-based hand sanitizer.

After the scene has been properly decontaminated and disinfected, thoroughly re-inspect for any residual or missed contamination. Re-decontaminate as necessary.
VI. DISPOSAL OF CONTAMINATED WASTE

✓ All regulated medical waste will be disposed of in properly labeled, leak-proof, red biohazard bags. All biohazard bags will be double-bagged and tightly sealed. Be careful not to contaminate the outside of the bags and do not over-fill biohazard bags. Keep each bag less than 40 lbs.

✓ Sharps will be placed inside tightly sealed puncture and leak proof plastic containers before being placed inside biohazard bags for disposal.

✓ Any free-flowing contaminated liquids will be solidified with an approved micro-encapsulation agent or other suitable absorbent prior to be disposed of in biohazard bags. No free liquids will be disposed of in biohazard bags.

✓ Large contaminated waste objects (mattresses, rugs, etc.) that will not fit into commercially available biohazard bags will be securely wrapped in two (2) layers of tightly duct-taped 6-mil polyethylene sheeting, preferably opaque. Appropriate biohazard labels (see below) will be placed in multiple conspicuous locations.

✓ All regulated biohazard waste must be disposed of through either the Dowell Health Center or EHS. No regulated biohazard waste will be disposed of as non-hazardous domestic waste.

  o Properly sealed and labeled biohazard bags weighing less than or equal to (≤) 40 lbs. will be disposed of through Dowell Health Center.

   ▪ Normal Health Center at Ward & West business hours are Monday – Friday, 8am-5pm. Contact the Health Center Lab at (410) 704 – 2431 prior to dropping off biohazard bags for disposal.
- After duty hours and on weekends or holidays, temporarily store properly sealed and labeled biohazard bags in a secure location pending disposal at the Health Center.
  - Properly sealed and labeled biohazard bags weighing more than (> 40 lbs. or large regulated medical waste not capable of fitting into biohazard bags will be disposed of through EHS.
    - Normal EHS business hours are Monday- Friday, 7am - 5pm. Contact EHS at (410) 704-2949 to coordinate the disposal of large contaminated waste items.
    - After duty hours and on weekends or holidays, temporarily store properly sealed and labeled biohazard bags in a secure location pending disposal through EHS.
  ✓ Waste bleach or other disinfectant solutions may be safely disposed of via the sanitary sewer system. Do not dispose via the storm water sewer system. After disposal, thoroughly rinse the container with clean water and allow to air dry.

VII. **QUESTIONS**

Questions concerning these procedures should be directed to EHS at (410) 704-2949 or safety@towson.edu.
Appendix 1

DuPont
“RelyOn” Multipurpose
Disinfectant Cleaner
Product Information
DuPont™ RelyOn™
MULTI-PURPOSE DISINFECTANT CLEANER

RELY ON DUPONT FOR PRODUCT PERFORMANCE, INNOVATION, AND USER SAFETY

- Virucide, Bactericide, and Fungicide
- Efficacious against a wide range of pathogens (on hard non-porous surfaces) including:
  - HIV, Hepatitis A, B, and C
  - MRSA, VRE, and RSV
  - Norovirus (Norwalk-like virus)
- Bleach alternative for bloodborne pathogens
- 3 year shelf life for powder
- Easy to ship and store
- No fumes or offensive odor
- Compatible with most hard non-porous surfaces
- Can be used as part of a compliance program to meet the OSHA Bloodborne Pathogen Standard (OSHA 1910.1030)
- Cleans and disinfects in one step
- Sanitizes non-food contact surfaces in 30 seconds
- Will not harm most surfaces upon incidental contact

DuPont™ RelyOn™ Multi-Purpose Disinfectant Cleaner is a peroxynitrate-based powder or tablet, available in a variety of package sizes, which is dissolved in water to provide an effective disinfectant solution.

DuPont™ RelyOn™ Multi-Purpose Disinfectant Cleaner, when prepaed as a 1% working solution is efficacious against a wide range of human pathogens including Hepatitis A, B, and C, HIV, MRSA, VRE, influenza, and Norovirus (Norwalk-like virus)—please see the product label for full details. The RelyOn™ Multi-Purpose Disinfectant and Cleaner tablets have a shelf life of 2 years and the powder 3 years, making the product convenient to both ship and store.

DuPont™ RelyOn™ disinfectants offer effective alternatives to bleach for cleaning and disinfection of hard, non-porous surfaces after exposure to bloodborne pathogens or body fluids. The 1% working solution is non-irritating to eyes and skin on incidental contact as well as less corrosive to environmental surfaces. These products are more cost-effective with a broader spectrum of efficiency claims than ready-to-use quats.

Available in a 5 kg bucket, 500 g shaker, 50 g sachet, and 10- or 60-count 5 g tablets with 16- or 32-oz spray bottles.
### Microorganism, Disease[^], Reduction of Microorganism[^]

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<thead>
<tr>
<th>Virus</th>
<th>Disease</th>
<th>% Reduction</th>
</tr>
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<tbody>
<tr>
<td>Hepatitis A virus (HAV)</td>
<td>Viral hepatitis</td>
<td>&gt;99.99</td>
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<tr>
<td>Hepatitis B virus (HBV)</td>
<td>Viral hepatitis; cirrhosis and liver cancer</td>
<td>&gt;99.99</td>
</tr>
<tr>
<td>Hepatitis C virus (HCV)</td>
<td>Viral hepatitis; cirrhosis and liver cancer</td>
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<tr>
<td>HIV-1 (AIDS virus)</td>
<td>Human immunodeficiency syndrome</td>
<td>&gt;99.99</td>
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<tr>
<td>Influenza A virus</td>
<td>Flu (pandemic outbreaks), pneumonia</td>
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</tr>
<tr>
<td>Influenza B virus</td>
<td>Flu</td>
<td>&gt;99.99</td>
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<tr>
<td>Noroviruses (Norwalk-like viruses)</td>
<td>Gastroenteritis, vomiting, diarrhea</td>
<td>&gt;99.99</td>
</tr>
<tr>
<td>RS Virus (Respiratory syncytial virus)</td>
<td>Respiratory disease (otitis media, bronchitis, pneumonic esp. in infants)</td>
<td>&gt;99.99</td>
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### Bacteria

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<th>Bacteria</th>
<th>Disease</th>
<th>% Reduction</th>
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<tr>
<td>Bacillus cereus</td>
<td>Infectious diarrhea, gastroenteritis</td>
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<tr>
<td>Campylobacter jejuni</td>
<td>Food borne gastroenteritis, campylobacteriosis</td>
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<td>Chlamydia pneumoniae</td>
<td>Respiratory infections</td>
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<td>Clostridium perfringens</td>
<td>Food poisoning, gas gangrene and peritonitis infections</td>
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<td>Listeria monocytogenes</td>
<td>Listeriosis; food poisoning</td>
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<tr>
<td>Shigella sonnei</td>
<td>Bacillary dysentery</td>
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<td>Streptococcus pyogenes</td>
<td>Strain throat, scarlet fever, impetigo, cellulitis, toxic shock syndrome</td>
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<td>Klebsiella pneumoniae</td>
<td>Pneumonia, septicaemia, wound and urinary tract infections</td>
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<td>Escherichia coli</td>
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<td>E. coli O157:H7</td>
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<td>Salmonella typhimurium</td>
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<td>Salmonella choleraeus</td>
<td>Septicaemia or focal infections</td>
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<td>Pseudomonas aeruginosa</td>
<td>Urinary tract, respiratory, soft tissue, and gastrointestinal infections; dermatitis</td>
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<td>Staphylococcus aureus</td>
<td>Skin infections, pneumonia, meningitis, and focal poisoning</td>
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<td>MRSA (Methicillin Resistant S. aureus)</td>
<td>Skin infections, pneumonia, meningitis, gastrointestinal and nosocomial infections</td>
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<td>Staphylococcus epidermidis</td>
<td>Subacute endocarditis</td>
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<tr>
<td>VRE (Vancomycin Resistant Enterococcus)</td>
<td>Nosocomial infections, urinary tract infections, bacteremia and endocarditis</td>
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### Fungi

<table>
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<th>Fungus</th>
<th>Disease</th>
<th>% Reduction</th>
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</tr>
<tr>
<td>Trichophyton mentagrophytes</td>
<td>Athlete foot</td>
<td>&gt;99.99</td>
</tr>
</tbody>
</table>

[^]: The list of diseases is only a representation of some of the more common diseases known to be caused by the listed microorganisms and is not comprehensive.

[^2]: % Reduction was calculated from mean carrier density data for bacteria or the IC50 [µg/mL] or Log10 [CFU/mL] of test system minus basal detection for viruses.

DuPont™ RelyOn™ Multi-Purpose Disinfectant Cleaner is ideal for use on hard, non-porous surfaces in the following scenarios:

- Emergency Response Vehicles and Equipment
- Military Vehicles and Installations
- Medical and Dental Offices
- Floors, Bed Frames, Sinks
- Bodily Fluid Spillages such as Blood and Urine
- Public Areas (schools, hotels, elevators)
- Transportation (ships, buses, trains)
- Prisons, Police Stations i.e. cells, Holding Cells, Processing Areas
- Laboratories
- Disinfecting Respirator Face Pieces
- Sanitizing/Disinfecting CPR Manikins

DuPont™ RelyOn™ Multi-Purpose Disinfectant Cleaner
BROAD SPECTRUM DISINFECTANT

Keep out of reach of children.

DANGER/PELIGRO

Table Form

First Aid

In case of contact, wash affected area with soap and water. If irritation persists, see a physician.

Inhalation

Avoid breathing dust or fumes. If exposed, seek medical attention.

Ingestion

Seek medical attention immediately. Do not induce vomiting.

Skin Contact

Wash affected area with soap and water. If irritation persists, see a physician.

Eye Contact

Flush affected eye with large amounts of water for 15 minutes. Seek medical attention.

Precautionary Statements

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Flammable. Causes skin burns and serious eye damage. Harmful if inhaled. Avoid contact with skin and eyes. Treat promptly with cold water. Do not use on expanding fire or fuel-gas fires. Keep out of reach of children.

SPECIAL INSTRUCTIONS FOR CLEANING AND DISINFECTATION AGAINST HIV-1, HBV, AND HEPATITIS C ON SURFACE/ADHESIVE BANDAGES WITH VEHICLE-FREE ALCOHOL

Special Instructions for Cleaning and Disinfection of Hard Non-Porous Food Contact Surfaces

Special Instructions for Cleaning and Disinfection of Hard Non-Porous Non-Food Contact Surfaces

Manufactured by:

E.I. du Pont de Nemours and Company
100 Meridian Street
Wilmington, DE 19899

Questions? Call 1-800-441-7151

HHS Guide No. 47/2004/2142/01

CLP Category: 3

EC No. 2019/2006/EC

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Revised August 1, 2014

Page 21
Material Safety Data Sheet

RelyOn® Multipurpose Disinfectant Cleaner

Version 12.1

Revision Date 06/01/2010 Ref. 130000093735

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : RelyOn® Multipurpose Disinfectant Cleaner
MSDS Number : 130000093735
Product Use : Disinfectant, Cleaning agent
Manufacturer : DuPont
1007 Market Street
Wilmington, DE 19898
Product Information : 1-800-441-7515 (outside the U.S. 1-302-774-1000)
Medical Emergency : 1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency : CHEMTREC: 1-800-424-9300 (outside the U.S. 1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Potential Health Effects
Skin : Irritating to skin.
Eyes : Risk of serious damage to eyes.
Inhalation : Causes respiratory tract irritation.
  Potassium peroxymonosulfate
  Sulfamic acid : Inhaled corrosive substances can lead to a toxic edema of the lungs. Harmful if inhaled and may cause delayed lung injury. Liquid aerosols may cause; Oedema.
Ingestion : Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
  Potassium peroxymonosulfate
  Sulfamic acid : Burning sensation Abdominal pain
Material Safety Data Sheet

RelyOn® Multipurpose Disinfectant Cleaner
Version 12.1

Revision Date 06/01/2010 Ref. 130000093735

Sodium chloride : Gastrointestinal discomfort. Vomiting, diarrhoea.
Target Organs
Potassium peroxymonosulfate : Eyes
Primary Routes of Entry : Eye contact, Skin contact
Carcinogenicity
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium peroxymonosulfate</td>
<td>10058-23-8</td>
<td>21.41 %</td>
</tr>
<tr>
<td>Sulfamic acid</td>
<td>5329-14-6</td>
<td>4 - 6 %</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>7647-14-5</td>
<td>1.5 %</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

Skin contact : In case of contact, immediately flush skin with plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Consult a physician if necessary.
Eye contact : Rinse immediately with plenty of water and seek medical advice.
Inhalation : Move to fresh air. Consult a physician if necessary.
Material Safety Data Sheet

RelyOn® Multipurpose Disinfectant Cleaner

Version 12.1

Revision Date 06/01/2010 Ref. 130000093735

Ingestion: Call a poison control center or doctor for treatment advice. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Do not give anything by mouth to an unconscious person.

SECTION 5. FIRE-FIGHTING MEASURES

Flammable Properties
Flash point: does not flash

Suitable extinguishing media: Water spray, Dry powder, Alcohol-resistant foam

Unsuitable extinguishing media: Carbon dioxide (CO2)

Firefighting Instructions: Wear self-contained breathing apparatus (SCBA). Wear suitable protective equipment. Evacuate personnel to safe areas. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel): Wear suitable protective equipment. Wear respiratory protection.

Spill Cleanup: Sweep up and shovel into suitable containers for disposal. Avoid dust formation. After cleaning, flush away traces with water.

Accidental Release Measures: Prevent material from entering sewers, waterways, or low areas. Dispose of in accordance with local regulations.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel): Avoid contact with skin, eyes and clothing. Do not get on clothing. Wash off with plenty of water. Wash clothing after use. Do not breathe dust. Avoid dust formation in confined areas. For personal protection see section 8.
When using do not eat, drink or smoke.

Storage
- Keep out of the reach of children. Keep away from food, drink and animal feedingstuffs. Keep containers tightly closed in a dry, cool and well-ventilated place. Store in original container.
- Keep away from: Combustible material
- Stable under recommended storage conditions.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls
- Provide local exhaust ventilation when handling material in bulk. Ensure adequate ventilation.

Personal protective equipment
- Respiratory protection: Provide adequate ventilation. Wear NIOSH approved respiratory protection as appropriate.
- Hand protection: Material: Impervious gloves
- Eye protection: Wear coverall chemical splash goggles and face shield when the possibility exists for eye and face contact due to splashing or spraying of material.
- Skin and body protection: Where there is potential for skin contact, have available and wear as appropriate, impervious gloves, apron, pants, jacket, hood and boots.

Exposure Guidelines

<table>
<thead>
<tr>
<th>Substance</th>
<th>AEL *</th>
<th>(DUPONT)</th>
<th>mg/m^3</th>
<th>8 &amp; 12 hr. TWA</th>
<th>Total dust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentapotassium bis(peroxymonosulphate) bis(sulphate)</td>
<td>AEL *</td>
<td>(DUPONT)</td>
<td>1 mg/m^3</td>
<td>8 &amp; 12 hr. TWA</td>
<td>Total dust</td>
</tr>
<tr>
<td>Sulfamic acid</td>
<td>AEL *</td>
<td>(DUPONT)</td>
<td>0.5 mg/m^3</td>
<td>8 &amp; 12 hr. TWA</td>
<td></td>
</tr>
<tr>
<td>AEL *</td>
<td>(DUPONT)</td>
<td>1.5 mg/m^3</td>
<td>15 minute TWA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dipotassium peroxodisulphate</td>
<td>TLV</td>
<td>(ACGIH)</td>
<td>0.1 mg/m^3</td>
<td>TWA as persulfate</td>
<td></td>
</tr>
</tbody>
</table>
Material Safety Data Sheet

RelyOn® Multipurpose Disinfectant Cleaner
Version 12.1

Revision Date 06/01/2010  Ref. 130000093735

Potassium sulfate (DUPONT) 10 mg/m3 8 hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES
Form: powder
Color: yellow
Odor: pleasant, sweet
pH: 2.4 - 2.7
% Volatile: 1.07 %
Water solubility: 65 g/l at 20 °C (68 °F)

SECTION 10. STABILITY AND REACTIVITY
Conditions to avoid: Protect from moisture.
Incompatibility: Strong bases combustibles, Acids, oxidizers, Brass, Copper, Halogenated compounds, Cyanides, Heavy metal salts
Hazardous decomposition products: Sulphur dioxide, Chlorine

SECTION 11. TOXICOCLOGICAL INFORMATION
RelyOn® Multipurpose Disinfectant Cleaner
Inhalation 4 h LC50: 3.7 mg/l, rat
Dermal LD50: 2,200 mg/kg, rabbit
Oral LD50: 4,123 mg/kg, rat
Skin irritation: Moderate skin irritation
Eye irritation: Risk of serious damage to eyes.
Sensitisation: Animal test did not cause sensitization by skin contact, guinea pig
Material Safety Data Sheet

RelyOn® Multipurpose Disinfectant Cleaner

Version 12.1

Revision Date 06/01/2010

Ref. 130000009735

Potassium peroxymonosulfate
Repeated dose toxicity

: Inhalation
   rat
   Target Organs: Eyes
   Pathologic changes, Eyes, corneal damage. Information given is based on data obtained from similar substances.

Oral - gavage
   rat
   Reduced body weight gain. Gastrointestinal effects. Information given is based on data obtained from similar substances.

Mutagenicity

: Genetic damage in cultured mammalian cells was observed in some laboratory tests but not in others.
   Did not cause genetic damage in animals.
   Did not cause genetic damage in cultured bacterial cells.
   Information given is based on data obtained from similar substances.

Teratogenicity

: Animal testing showed effects on embryo-foetal development at levels equal to or above those causing maternal toxicity.
   Information given is based on data obtained from similar substances.

Sodium chloride

Mutagenicity

: Did not cause genetic damage in cultured bacterial cells.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

Potassium peroxymonosulfate

96 h LC50

: Oncorhynchus mykiss (rainbow trout) 53 mg/l
   Information given is based on data obtained from similar substances.

72 h EC50

: Pseudokirchneriella subcapitata (green algae) 0.97 mg/l
   Information given is based on data obtained from similar substances.

48 h EC50

: Daphnia magna (Water flea) 3.5 mg/l
   Information given is based on data obtained from similar substances.

Sulfamic acid

96 h LC50

: Pimephales promelas (fathead minnow) 14.2 mg/l
Material Safety Data Sheet

RelyOn® Multipurpose Disinfectant Cleaner

Version 12.1

Revision Date 06/01/2010 Ref. 130000093735

Sodium chloride
LC50 : Pimephales promelas (fathead minnow) 7.650 mg/l

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal : In accordance with local and national regulations. Do not flush into surface water or sanitary sewer system. Do not contaminate water, food or feed by disposal.

SECTION 14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

SECTION 15. REGULATORY INFORMATION

TSCA Status : On the inventory, or in compliance with the inventory
EPA Reg. No. : 71654-7

SECTION 16. OTHER INFORMATION

HMIS
Health : 3
Flammability : 0
Reactivity/Physical hazard : 0
PPE : Personal Protection rating to be supplied by user depending on use conditions.

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Material Safety Data Sheet

RelyOn® Multipurpose Disinfectant Cleaner

Version 12.1

Revision Date 06/01/2010 Ref. 130000093735

Do not use for medical-clinical purposes.

Contact person : MSDS Coordinator, DuPont Chemicals and Fluoroproducts, Wilmington, DE 19898, (800) 441-7515

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Significant change from previous version is denoted with a double bar.
Distribution:

- Athletics
- Auxiliary Services
  - Dining Services
  - Events & Conference Services
- Dowell Health Center
- EHS
- Facilities Management
  - ABM
- Housing & Resident Life
- Parking & Transportation Services
- TUPD