A. Purpose
This policy addresses the need for University laboratories and patient care areas to develop spill response plans addressing foreseeable occurrences. Materials for clean-up should be assembled in one place, and personnel should be trained in the appropriate response to clean up spills or how to request assistance. Designations should be established between those spills and events that laboratories are capable of handling, versus those circumstances that require outside assistance.

B. Applicability/scope
1. This policy applies to areas where infectious materials (including recombinant microorganisms), clinical specimens/tissues, or regulated medical waste are handled.
2. This policy covers biological spills in laboratories, patient care environments and common areas of Columbia University.
3. Biological spills at BSL1 or BSL2 differ from chemical and radiological spills in that only direct contact with the spilled materials represents a hazard. Access to only the immediate area around the spill needs be restricted.
4. Biological spills at BSL3 or ABSL3 require a higher level response. Investigators that work at BSL3 or ABSL3 have written response protocols that are not detailed in this policy.
5. EH&S has written internal “Procedures for Responding to a Hazardous Materials Incident”, should a large scale biological spill require National Incident Management System or NIMS-equivalent command, resource and support staff.

C. Responsibilities
Spills in the University laboratory:
Investigators are generally responsible for cleaning up biological spills they create in the lab. Laboratories are required to maintain basic materials for response to routine spills (please see below; biological spill kits). EH&S is available to consult on clean-up procedures and will assume responsibility for cleaning the spill if it is beyond the scope of the lab staff’s ability, due to hazard level or resource limitation.

Spills in University patient care areas:
Clinicians are generally responsible for cleaning up biological spills that contact their equipment (e.g. dental chairs) and work surfaces. Facilities are generally responsible for cleaning up biological spills that are on the floor. Clinicians should call Facilities for service (212-305-4357). Facilities will then reach out to EH&S if a consultation on clean up procedures is warranted. Departments are encouraged to contact Facilities to establish specific agreements regarding the scope of spill clean-up services.

Spills in common areas:
Facilities are generally responsible for cleaning up biological spills that are, for example, on the hallway floor or in a bathroom. EH&S is available to consult on clean up procedures and will assume responsibility for the spill if it is large.
D. Definitions
BSL – Biosafety Level
BSC - Biological Safety Cabinet
NIMS - National Incident Management System
PPE – Personal Protective Equipment
RMW – Regulated Medical Waste

E. Procedures
1. Personal exposure takes priority over clean up.
   If exposure occurs, immediately remove contaminated clothing and other protective
   equipment and wash affected areas with soap and water. If medical follow-up is warranted it
   should be sought immediately (see Medical Surveillance, below). For additional detail
   regarding response to personal exposures to biological materials, please see relevant sections
   of the University’s Bloodborne Pathogens Exposure Control Plan

2. Materials in a biological spill kit
   The following materials should be set aside apart from those that are in regular use in the lab
   to ensure their availability in an emergency.
   - Goggles or face shield, gloves, wrap-around lab coat, shoe covers (optional)
   - Disinfectant solution*
   - Paper towels or other absorbent
   - Forceps, tongs, broom, dust pan
   - Red bags for regulated medical waste, sharps container
   *A 1/10 dilution of household bleach, prepared fresh daily is effective in most situations;
   contact EH&S for more information about selection of disinfectants, particularly for any
   organisms atypical in their sensitivity to disinfectants.

3. Spill response procedures involving microorganisms, including recombinant microorganisms,
   requiring BSL1 or BSL2 containment.
   - Alert personnel in vicinity to leave the immediate area.
   - Don protective equipment (gown/lab coat, gloves, eye protection).
   - Cover an area twice the size of the spill with paper towels, or other absorbent material.
   - Pour disinfectant solution onto the spill, starting at the perimeter and working inward
     from the edges of the towels. Avoid splashing.
   - Allow 20 minute contact period.
   - Wipe down any contaminated stationary equipment or furniture twice with
     disinfectant. Contaminated fabric-covered furniture or porous material should
     generally be treated with disinfectant and then discarded. EH&S can provide a
     consultation on other contingencies.
   - Use forceps, tongs, or broom to remove broken glass and other items; place in sharps
     container or red bag, as appropriate.
   - Remove towels and re-clean area with disinfectant solution.
• Collect and dispose in Regulated Medical Waste (RMW) container.
• Decontaminate (autoclave, or use a chemical disinfectant) reusable clean-up items and other permanent equipment.
• Inform laboratory personnel when the clean-up is complete.

Procedures for BSL-1 and BSL-2 laboratories should incorporate a degree of flexibility. One could safely abridge the procedures above if 1 ml were spilled over a small bench top area. However, dropping 50 ml of culture on the floor necessitates the more detailed procedure.

4. Spills inside a Biological Safety Cabinet (BSC)
   • Keep the cabinet running.
   • PPE should be used at the time of the spill, but if it is not, don gown/lab coat, gloves and eye protection.
   • Clean-up as per directions above, making sure to wipe down back and side walls of cabinet.
   • If material has spilled into the catch tray beneath the work surface, add a volume of disinfectant roughly equivalent to the quantity of the spill in the tray, wait 20 minutes, and absorb with paper towels. For more details on disassembly of BSC, see the EH&S biosafety manual section 2.3.1.5; Procedures for Effective Use of BSCs (http://www.ehs.columbia.edu/Policy2.3d.html#two.3.1).
   • After completion, allow cabinet blower to run for ten minutes before resuming work.

5. Spills inside a centrifuge
   • Shut centrifuge off and do not open the lid for 20 minutes to allow aerosols to settle.
   • Put on PPE, see above.
   • Use a squeeze bottle to apply disinfectant to all contaminated surfaces within the chamber, taking care to minimize splashing.
   • Allow 20 minute contact period and then complete clean-up of the chamber.
   • Remove buckets and rotors to nearest BSC; disinfect and clean as per manufacturer's instructions.
   The use of centrifuge safety cups can limit the extent of contamination to the cup itself, which can be reopened inside a BSC for cleaning.

6. Spills outside the laboratory in common areas
   • Viable organisms should only leave the laboratory in a well-sealed primary (inner) and secondary (outer) container with a closable top. A test-tube rack inside a tray is not acceptable for transport.
   • The exterior of the secondary container should be wiped down with disinfectant prior to leaving the laboratory so that it can be transported without wearing gloves.
   • In the unlikely event of a spill, post someone to notify people in the immediate area, collect PPE and clean-up material and then proceed with clean-up. Public Safety can help restrict access to contaminated areas.
7. **Spill procedures in clinical areas**
   - Healthcare providers can clean up spills on the floor in clinical areas if they feel comfortable doing so. Alternatively, Facilities should be notified, please see Section C, above.
   - Alert personnel in vicinity to avoid the immediate area.
   - Procedures are the same as those detailed in section E.2.

8. **Abandoned spills in common areas.**
   - Biological spills encountered in a hallway (e.g. leaking red bag placed inappropriately on the floor). Notify personnel to avoid the immediate area. Notify EH&S. Public Safety can help restrict access to contaminated areas.
   - Blood spills encountered in a bathroom (e.g. menstrual blood or nosebleed). Such spills should be reported to Facilities.

F. **Emergency contacts**
   - Public Safety Medical Center: 212-305-8100, Emergency: 212-305-7979
   - Facilities: 212-305-4357
   - EH&S Morningside: 212-854-8749
   - EH&S Medical Center: 212-305-6780
   - Locations and contact info for health care providers: http://www.ehs.columbia.edu/WhereToGoForMedicalAttention1.pdf

G. **Medical Surveillance**
   - Personal exposure takes priority over clean up. If medical follow-up is warranted it should be sought immediately. For details on health care providers see: http://www.ehs.columbia.edu/WhereToGoForMedicalAttention1.pdf
   - For more information on post exposure response, review the Bloodborne Pathogens Exposure Control Plan (http://ehs.columbia.edu/BloodbornePathogensExposureControlPlan.html#exp).

H. **Recordkeeping**
   - N/A

I. **Appendices**
   - None

J. **Forms**
   - None

K. **References**
   - Biological Spills: Clean-up Procedures http://ehs.columbia.edu/biospill.html
Locations of health care providers:
http://www.ehs.columbia.edu/WhereToGoForMedicalAttention1.pdf

L. Appendix – Printable “Clean-up Procedures Quick Guide”
Biological Spills: Clean-up Procedures Quick Guide
(In case of a biological materials spill, Print Out this guide and follow instructions)

Spill Clean-up Materials
- Disinfectant solution (10% freshly prepared bleach is effective in most cases)
- Forceps, tongs, broom, dust pan
- Personal Protective Equipment (PPE): safety glasses, goggles, or face shield, utility gloves, wrap-around lab coat, shoe covers (optional)
- ‘Biohazard’ red bag, and sharps container if needed
- Paper towels, blue pads, or other absorbent

Spill Involving Blood or liquids with BSL-1 and BSL-2 Infectious Materials
1. Alert people in immediate area.
2. Don PPE.
3. Cover an area twice the size of the spill with paper towels. Pour disinfectant solution onto the spill, starting at the perimeter and working inward from the edges of the towels. Avoid splashing.
4. Allow a 20 minute contact period.
5. Wipe down any contaminated stationary equipment or furniture with disinfectant.
6. Use forceps, tongs, or broom to remove broken glass and other items; for glass, place in sharps container or red bag if soft material.
7. Remove towels and re-clean area with disinfectant solution.
8. Decontaminate (autoclave, chemical treatment) reusable clean-up items and other reusable equipment.
9. Inform laboratory personnel when the clean-up is complete.

Spill Involving Liquids with BSL-3 Infectious Materials
1. Immediately alert personnel in the area, leave the room, and close the door.
2. Notify Public Safety and provide a phone number where you can be reached. Instruct them to contact EH&S.
3. Wait thirty minutes to allow airborne organisms to settle or be cleared by the ventilation system.
4. Collect all needed spill response supplies; don PPE for BSL-3 work, including a respirator (Note: respirator use requires fit-testing).
5. Return to lab and clean-up as per directions in BSL-2 section above.
6. Autoclave all spill-related materials and then dispose in appropriate RMW container.

Spill Inside a Biological Safety Cabinet (BSC)
1. Keep the cabinet running.
2. Clean-up as per directions on the left, making sure to wipe down back and side walls of cabinet.
3. If material has spilled into the catch tray beneath the work surface, add a volume of disinfectant equal to the quantity in the basin, wait 20 minutes, and absorb with paper towels.
4. After completion, allow cabinet to run for ten minutes before resuming work.

Spill Inside a Centrifuge
1. Shut centrifuge off and do not open the lid for 20 minutes to allow aerosols to settle.
2. Don PPE.
3. Use a squeeze bottle to apply disinfectant to all contaminated surfaces within the chamber, taking care to minimize splashing.
4. Allow 20 minute contact period and then complete clean-up of the chamber.
5. Remove buckets and rotors to nearest Biological Safety Cabinet; disinfect and clean as per manufacturer's instructions.

For full policy, go to: http://www.ehs.columbia.edu/BiologicalSpills.pdf