Laboratory Specific Biosafety Manual

UCLA

Laboratory Location: Boyer Hall Rooms 206, 219, 225, 229

PI Name: David Eisenberg

Manual was created on: May 8, 2015

Emergency Contact Information

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Name:
Phone number:
Alt Phone Number:

Name:
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Campus Police: 911 or 310-825-1491

Report all serious injuries to EH&S at x59797 or 310-825-9797 within 8 hours

All biohazard incidents, exposures and spills must be reported to Biosafety at x63929 or 310-206-3929 within 8 hours

To receive health care for work place injuries and exposures:
Occupational Health Facility (OHF) 67-120 CHS, x56771: Monday-Friday 7:00am-4:00pm

This laboratory manual contains the following sections:

1. Compliance Documents
    a. Current IBC applications
    b. IBC approval letters
2. Training Documentation
    a. List of EH&S requirements and refreshers
    b. Lab specific training documents
3. Occupational Health and Medical Surveillance
    a. Pathogen Safety Data sheets
    b. Vaccination offer documentation
    c. Declination of vaccination documentation
4. Cal-OSHA Exposure Control Plan
5. Lab Specific SOPs
6. References

This template-derived file with clickable links is:

/home/dha/docs/labmanual/safety/biosafety_IBC/biosafety_manual/EisenbergLaboratorySpecificBiosafetyManual.docx

Section 1. Compliance documentation

This section should include the following **IF APPLICABLE:**

- Currently approved IBC applications for the lab
- IBC approval Letters for lab
- Agent summary cards for animal research
- Past inspection reports

Section 2. Training Documentation

This section should include the following **IF APPLICABLE:**

- List of EH&S requirements and refresher schedule
- Lab specific training documentation, Biosafety Manual review
- Lab specific training documentation, initial and annual competency validation for staff members as determined by the lab

EH&S Provided Training

As determined by your IBC approval, specific procedures and agents

Please check the box next to training required for your lab

x	**Medical Waste Management (MWM)**

Required for personnel handling or disposing of materials as medical waste (biohazard, trace chemo waste, pathology waste, etc.), handling or disposing of animals and/or animal tissues as medical waste, and other research related projects that involves generating, handling, storage and/or transport of medical waste. *At a minimum, must be taken within 90 days from start of employment and 3 years thereafter and as needed.*

x	**Bloodborne Pathogens (BBP)**

Required prior to beginning of work for personnel working with clinical specimens such as blood, human body fluids, tissue, and potentially infectious human cell lines (including primary cell culture and cell lines known or likely to be infected with HIV, Hepatitis B, or Hepatitis C). This training applies for personnel when there is a potential occupational exposure or contact to blood, blood products, or other potentially infectious materials. *Initial training must be taken in classroom. Refresher training (minimum annually) may be completed online.*

x	**Biological Safety Cabinet (BSC)**

Required for personnel using, purchasing, working with infectious materials under Biosafety Level 2 or higher (including materials under the Bloodborne Pathogens Standard), working with animals requiring biocontainment housing, or other research related projects involving the use of BSCs. *Must be taken by first-time BSC users and is required every 3 years and as needed.*

x	**Biosafety A,B,Cs – Biosafety Level 2 (BSL2)**

Required prior to beginning of work for personnel working with recombinant DNA, infectious materials, animal experiments requiring BSL2 housing, and other research related projects that involves BSL2 containment practices and facility. *At a minimum, must be taken every 3 years and as needed.*

	Biosafety Level 2 with Biosafety Level 3 practices (BSL2+)

Required prior to working with recombinant DNA, infectious materials, animal experiments requiring BSL2+ housing, and other research-related projects that involve BSL2+ containment practices and facility. BSL2+ is offered immediately at the close of every BSL2 session and lasts for approximately 30 minutes. Be sure to specify interest in BSL2+ when registering for BSL2 training. *Prerequisite: BSL2. At a minimum, must be taken every 3 years and as needed.*

	Shipping Biological Materials

This training is required prior to packaging and/or shipping biological or infectious substances for diagnostic or investigational purposes. This is an online course approximately 3 hours in length (completed at the user's own pace). Cost: $95. Prerequisite: Bloodborne Pathogens. This training is required every 2 years.

Laboratory Specific Training Record

<u>Biosafety Manual Review</u>

The biosafety manual should be read and reviewed by each laboratory member before initiating work. By signing below you are stating that you have read this document in its entirety and feel confident about the information that is presented. If you have any questions please talk to your PI and/or biosafety at 310-206-3929

Principal Investigator: David Eisenberg

Name	UID	Date	Signature

Laboratory Specific Training Records

Lab specific training is required before the start of an experiment and at least annually thereafter.

Please use this form to document annual lab specific training. (Copy as needed)

Principal Investigator: David Eisenberg

Trainer: Dan Anderson

Topics covered during training include:

(Example topics can include: biosafety manual review, emergency procedures, spill clean up, exposure control plan, etc)

1.
2.
3.
4.
5.

Name	UID	Date	Signature

Section 3. Occupational Health and Hazard Communication

This section should include the following **IF APPLICABLE:**

- Hazard communication
- Pathogen Safety Data Sheets
- Vaccination offer and declination documentation
- Post exposure prophylaxis plan

Vaccination Offer and Declination Records

Hepatitis B Vaccine

By signing below I acknowledge that I have been offered a Hepatic B vaccine at no cost to myself. To receive the vaccine and discuss this with a health care professional, visit OHF at 67-120 CHS, x56771

Principal Investigator: David Eisenberg

Name	I was offered the HBV (check here)	I refuse the HBV (check here)	UID	Date	Signature

Canada Public Health Agency of Canada | Agence de la santé publique du Canada

HUMAN IMMUNODEFICIENCY VIRUS

PATHOGEN SAFETY DATA SHEET - INFECTIOUS SUBSTANCES

SECTION I - INFECTIOUS AGENT

NAME: Human immunodeficiency virus (HIV).
SYNONYM OR CROSS REFERENCE: HIV, acquired immune deficiency syndrome, AIDS. Previously lymphadenopathy-associated virus, human T-lymphotropic virus type III (HTLV-III), immunodeficiency- associated virus, and AIDS-associated retrovirus.
CHARACTERISTICS: HIV is a member of the *Retroviridae* family, genus *Lentivirus*. HIV is an icosahedral, enveloped virus, of approximately 100 to 110 nm in diameter, and has a single-stranded, linear, positive- sense RNA genome. HIV has two recognised strains: HIV-1 and HIV-2. Upon entry into the host cell, retroviral RNA is converted to DNA by a virally encoded reverse transcriptase enzyme, the DNA transcript
is integrated into the host's chromosomal DNA

SECTION II - HAZARD IDENTIFICATION

PATHOGENICITY/TOXICITY: AIDS is characterised by symptoms and infections caused by the breakdown of the immune system (by destruction or functional impairment of CD4 receptors) due to HIV infection. HIV can infect many cell types, mainly lymphocytes, but also macrophages, and microglia in the brain, and other neurological cells, resulting in profound asthenia, dementia and damage to the peripheral nervous system. Due to immunodeficiency, patients succumb to various fungi, parasites, bacteria, and/or viruses and are prone to certain tumours. The clinical features of HIV infection vary depending on the stage of the disease. Acute infection is accompanied by non-specific "flu-like" and "mononucleosis-like" symptoms such as myalgia, arthralgia, diarrhoea, nausea, vomiting, headache, hepatosplenomegaly, weight loss, and neurological symptoms. Early-stage disease refers to the period of clinical latency between the time of the primary infection and the development of symptoms indicative of advanced immunodeficiency. Typically, when the patient's CD4+ T-cell count falls below 500 cells/µL, syndromes indicative of depressed cell mediated immunity can appear. Late-stage disease refers to the period when the patient's CD4+ T-cell count falls below 200 cells/µL.
MODES OF TRANSMISSION: HIV is transmitted either by exposure of the virus to oral, rectal, or vaginal mucosa during sexual activity; by intravascular inoculation through transfusion of contaminated blood products; by using contaminated equipment during injection drug use; or from mother to infant during
pregnancy, delivery or breastfeeding. There are no obvious differences in disease manifestations in individuals infected by mucosal versus blood-borne routes.
HOST RANGE: Humans.
Infectious Dose: Unknown.
INCUBATION PERIOD: Variable. Commonly the time from infection to the development of detectable antibodies is generally 1 to 3 months; however, the time from HIV infection to diagnosis of AIDS had an observed range of less than 1 year to 15 years or longer.

SECTION III - DISSEMINATION

RESERVOIR: Humans. **ZOONOSIS**: None, although current evidence suggests that HIV-1 and HIV-2 entered into the human population through multiple zoonotic infections from simian immunodeficiency virus-infected non-human primates. **VECTORS**: No laboratory or epidemiological evidence suggests that biting insects have transmitted HIV infection.

SECTION IV – STABILITY AND VIABILITY

SUSCEPTIBILITY TO DISINFECTANTS: HIV is susceptible to fresh 2% glutaraldehyde, 2% Jodopax, hypochlorite, iodine, phenolics, and to a lesser extent 70% ethanol, NaOH and isopropanol.
PHYSICAL INACTIVATION: HIV is inactivated by ultraviolet (UV) light; however, the level of the inactivation is heavily influenced by the proximity of the UV source to the sample and the concentration of

protein in the sample environment. HIV is easily inactivated in a cell free medium; however, in cell associated samples and blood samples complete inactivation requires much longer exposures to the UV source. HIV is also inactivated at pH higher or lower than the optimal level of 7.1. A temperature of 60°C for 30 minutes will likely inactivate HIV; however, higher temperatures and incubations may be required depending on the initial titre of the virus.
SURVIVAL OUTSIDE HOST: HIV can remain viable in blood in syringes at room temperature for 42 days, and in blood and cerebrospinal fluid from autopsies for up to 11 days. Although drying in the
environment is known to cause a rapid reduction in HIV concentration, under experimental conditions,
Cell-free HIV dried onto a glass coverslip in 10% serum can survive for longer than 7 days, depending on the initial titre.

SECTION V - FIRST AID / MEDICAL

SURVEILLANCE: HIV is diagnosed by tests that assess whether an individual's immune system has produced an HIV-specific immune response. Common tests include the indirect binding assay, antibody capture assay, the double antigen sandwich, ELISA, immunofluorescence, Western blotting, line immunoassays, and PCR, as well as viral isolation.
FIRST AID/TREATMENT: AIDS must be managed as a chronic disease. Antiretroviral treatment is complex, involving a combination of drugs and resistance will appear rapidly if only a single drug is used. The 5 available classes of antiretroviral drugs, NRTIs, NtRTIs, NNRTIs, PIs and fusion inhibitors, can be combined to provide highly active antiretroviral therapy (HAART). For many (but not all) patients, HAART converts an inexorably fatal disease into a chronic disease with a fairly good prognosis.
PROPHYLAXIS: The majority of HIV exposures will warrant a two drug regimen, using 2 NRTIs or 1 NRTI
and 1 NtRTI. Combinations include: zidovudine (ZDV) and lamivudine (3CT) or emtricitabine (FTC);
stavudine (d4T) and 3TC or FTC; and tenofovir (TDF) and 3TC or FTC.

SECTION VI - LABORATORY HAZARD

LABORATORY-ACQUIRED INFECTIONS: As of 2001, there have been a total of 57 cases of documented occupationally acquired HIV among U.S. health care workers.

SOURCES/SPECIMENS: Blood, semen, vaginal secretions, cerebrospinal fluid, synovial fluid, peritoneal fluid, pleural fluid, pericardial fluid, amniotic fluid, other specimens containing visible blood, breast milk, unscreened or inadequately treated blood products, and infected human tissues.
Faeces, nasal secretions, sputum, sweat, vomitus, saliva, tears, and urine, are not considered potentially infectious unless they are visibly bloody.
PRIMARY HAZARDS: Needlestick, contaminated sharp objects, and/or direct contact of non-intact skin or mucous membranes with HIV-infected specimens/tissues.
SPECIAL HAZARDS: Extreme care must be taken to avoid spilling and/or splashing infected materials. HIV should be presumed to be in/on all equipment and devices coming in direct contact with infected materials.

SECTION VII - EXPOSURE CONTROLS / PERSONAL PROTECTION

RISK GROUP CLASSIFICATION: Risk Group 3.
CONTAINMENT REQUIREMENTS: Containment Level 2 facilities and equipment for work involving clinical specimens and non-culture procedures. Containment Level 3 facilities, equipment, and operational
practices for all work culturing HIV and for activities involving non-human primates and any animals experimentally infected or inoculated with HIV.
PROTECTIVE CLOTHING: Solid-front gowns with tight-fitting wrists, gloves, and respiratory protection
should be worn over laboratory clothing when infectious materials are directly handled.
OTHER PRECAUTIONS: All activities with infectious material should be conducted in a biological safety cabinet (BSC) or other appropriate primary containment device in combination with personal protective equipment. Centrifugation of infected materials must be carried out in closed containers placed in sealed
safety cups, or in rotors that are unloaded in a biological safety cabinet. The use of needles, syringes, and other sharp objects should be strictly limited. Open wounds, cuts, scratches, and grazes should becovered with waterproof dressings. Additional precautions should be considered with work involving animals or large scale activities.

SECTION VIII - HANDLING AND STORAGE

SPILLS: Allow aerosols to settle and, while wearing protective clothing, gently cover the spill with paper towels and apply 1% sodium hypochlorite starting at the perimeter, working inwards towards the centre. Allow sufficient contact time before clean up.
DISPOSAL: Decontaminate all materials for disposal by steam sterilisation, chemical disinfection, and/or incineration.
STORAGE: Infectious material should be stored in sealed, leak-proof containers that are appropriately
labelled.
This is a modified version of the Pathogen Data Sheets prepared by the Public Health Agency of Canada (updated September 2011). The full version can be found here: http://www.phac-aspc.gc.ca/lab- bio/res/psds-ftss/hiv-vih-eng.php

HEPATITIS B VIRUS (HBV)

PATHOGEN SAFETY DATA SHEET - INFECTIOUS SUBSTANCES

SECTION I - INFECTIOUS AGENT

NAME: Hepatitis B virus (HBV).
SYNONYM OR CROSS REFERENCE: HBV, hepatitis B, HBV infection, type B hepatitis, serum hepatitis, homologous serum jaundice, Australia antigen hepatitis, and HB
CHARACTERISTICS: HBV is a member of the Hepadnaviridae family, has a circular DNA genome that is partially double stranded and partly single stranded, and is 42 nm in diameter. HBV is comprised of many clinically important viral proteins, including the envelope protein, hepatitis B surface antigen (HBsAg),
hepatitis B core antigen (HBcAg), and a soluble nucleocapsid protein, the hepatitis B e antigen (HBeAg). Eight genotypes of HBV have been identified (A to H), that show differential geographical distributions and clinical outcomes. For example, genotypes B and C are prevalent in Asia, while A and D are more common in Europe, the Middle East, and India, and A and C are the most common in North America.

SECTION II - HAZARD IDENTIFICATION

PATHOGENICITY/TOXICITY: *Acute hepatitis B infection*: Persons with acute hepatitis B infection may be asymptomatic or present with a clinical picture varying from mild to severe hepatitis. Persons with symptomatic acute HBV infections can show signs and symptoms that include nausea, abdominal pain, vomiting, fever, jaundice, dark urine, changes in stool colour, and hepatomegaly or splenomegaly as well as signs of liver dysfunction. The outcome of acute HBV infection is usually good with complete recovery from any liver damage and seroconversion to anti-HBs, which confers long-term protection.
Chronic hepatitis B infection: Defined as the persistence of HBsAg for more than 6 months. Persons with chronic HBV infection may be asymptomatic or may suffer from symptoms such as fatigue, anorexia, nausea, abdominal discomfort and liver dysfunction. They are at substantially increased risk for developing chronic liver diseases, including cirrhosis of the liver and primary hepatocellular carcinoma.
HOST RANGE: Humans are the only known natural host. Chimpanzees are susceptible as an experimental animal.
Infectious Dose: Unknown.
MODE OF TRANSMISSION: HBV is transmitted by percutaneous or mucosal exposure to infected blood or other body fluid. HBV transmission has been observed with numerous forms of human contact such as perinatal/mother to child, household (non sexual), sexual, needle sharing, and occupational/health-care- related.
INCUBATION PERIOD: Usually 24-180 days (average 60-90 days). The variation depends on the amount of virus in the inoculum, mode of transmission, and other host factors.
COMMUNICABILITY: All persons who are HBsAg positive are potentially infectious, and blood can be
infectious for several weeks before the onset of clinical symptoms.

SECTION III - DISSEMINATION

RESERVOIR: Humans. **ZOONOSIS**: None. **VECTORS**: None.

SECTION IV - STABILITY AND VIABILITY

DRUG SUSCEPTIBILITY: Sensitive to antivirals such as interferon-α, pegylated interferon α-2a, lamivudine, adefovir, entecavir, telbivudine, and tenofovir.
SUSCEPTIBILITY TO DISINFECTANTS: Treatment of HBV diluted in phosphate buffered saline with 1%
non-ionic detergent (Triton X-100) plus 0.3% tri-n-butyl-phosphate leads to HBV inactivation. HBV is also inactivated by formaldehyde, glutaraldehyde, sodium hypochlorite (5,000 ppm available chlorine), quaternary ammonium compounds, and alcohols (70-80%).
PHYSICAL INACTIVATION: Moist heat at 98°C for 1 minute will partially inactivate HBV in a 1:10 serum
dilution. Incubation at 60°C for 10 hours (pasteurisation) will also inactivate HVB.
SURVIVAL OUTSIDE HOST: HBV can survive and remain infectious on environmental surfaces for at least 7 days.

SECTION V – FIRST AID / MEDICAL

SURVEILLANCE: Demonstration in sera of specific HB antigens and/or antibodies (HBsAg, anti-HBs, HBeAg, anti-HBe, and anti-HBc) using enzyme immunoassay techniques (e.g. ELISA) confirm diagnosis. Other tests include radioimmunoassay, PCR, real-time PCR, and non-PCR based DNA assays.
FIRST AID/TREATMENT: Following exposure to HBV the affected area should be washed immediately with soap and water. Mucous membranes and conjunctivae should be irrigated thoroughly with water. If the material involved is known to contain HBV or be positive for HBsAg then hepatitis B immunoglobulin
(HBIG) should be given, ideally within 48 hours of exposure. Licensed in the U.S. for treatment of HBV infection: interferon-α, pegylated interferon α-2a, lamivudine, adefovir, entecavir, telbivudine, tenofovir. **IMMUNISATION**: Two types of HB vaccine have been licensed and shown to be highly effective against
all subtypes of HBV. The first, prepared from plasma from HBsAg-positive persons, is still widely used. The
second is synthesised using recombinant DNA. Vaccination against HBV should now be the norm in laboratory personnel.
PROPHYLAXIS: Previously unimmunised adults exposed to HBsAg positive blood should receive HBIG as soon as possible as well as immunization with HB vaccine unless natural immunity can be confirmed.

SECTION VI - LABORATORY HAZARDS

LABORATORY-ACQUIRED INFECTIONS: The rates of HBV infection have been reported to be several times greater in laboratory staff than the general population and is one of the most frequently reported laboratory acquired infection.
SOURCES/SPECIMENS: Blood, cerebrospinal fluid, saliva, semen, synovial fluid, breast milk, bile,
faeces, nasopharyngeal washings, sweat, peritoneal, pleural, pericardial, amniotic, and unfixed tissues and organs.
PRIMARY HAZARDS: Percutaneous (e.g. needlestick) or mucous membrane exposures to blood that might contain HBsAg.
SPECIAL HAZARDS: There is a potential for infection via aerosols and HBV contaminated surfaces.

SECTION VII – EXPOSURE CONTROLS / PERSONAL PROTECTION

RISK GROUP CLASSIFICATION: Risk Group 2.

CONTAINMENT REQUIREMENTS: Containment Level 2 facilities, equipment, and operational practices for work involving infectious or potentially infectious material, animals, or cultures.
PROTECTIVE CLOTHING: Lab coat. Gloves when direct skin contact with infected materials or animals is unavoidable. Eye protection must be used where there is a known or potential risk of exposure to
splashes.
OTHER PRECAUTIONS: All procedures that may produce aerosols, or involve high concentrations or large volumes should be conducted in a biological safety cabinet (BSC). The use of needles, syringes, and other sharp objects should be strictly limited. Additional precautions should be considered with work involving animals or large scale activities.

SECTION VIII – HANDLING AND STORAGE

SPILLS: Allow aerosols to settle and, wearing protective clothing, gently cover spill with paper towels and apply an appropriate disinfectant, starting at the perimeter and working towards the centre. Allow sufficient contact time before clean up.
DISPOSAL: Decontaminate all wastes that contain or have come in contact with the infectious organism by autoclave, chemical disinfection, gamma irradiation, or incineration before disposing.
STORAGE: The infectious agent should be stored in leak-proof containers that are appropriately labeled .
This is a modified version of the Pathogen Data Sheets from Public Health Agency of Canada (updated December 2011). The full version can be found here:
http://www.phac-aspc.gc.ca/lab-bio/res/psds- ftss/hepatitis-b-eng.php

Hepatitis C Virus

Pathogen Safety Data Sheet - Infectious Substances

Section I - Infectious Agent

Name: Hepatitis C virus (HCV).
Synonym or Cross Reference: HCV, non-A non-B hepatitis, parenterally transmitted non-A non-B hepatitis, non-B transfusion-associated hepatitis, post-transfusion non-A non-B hepatitis, and HCV infection .
Characteristics: HCV belongs to the Flaviviridae family and *Hepacavirus*genus, and is a small (50nm), single-stranded, enveloped RNA virus. HCV was originally characterised in 1989, and has 6 major genotypes and over 100 subtypes. The main genotypes of HCV in North America are types 1, 2, and 3.

Section II - Hazard Identification

Pathogenicity/Toxicity: *Acute HCV infection*: Asymptomatic in most patients (60-75%). The syndrome of acute hepatitis is often preceded or accompanied by symptoms of fatigue, myalgia, low-grade fever, right upper quadrant pain, nausea, vomiting, jaundice, mild hepatosplenomegaly, maculopapular rash, and arthralgia. These symptoms may last for 2 to 12 weeks.
Chronic HCV infection: While a minority of those infected will spontaneously clear an acute infection with
HCV, in most cases (50-85%), the infection will become chronic. Some patients with chronic HCV infection experience: malaise, nausea, abdominal pain and pruritis. Fluctuating alanine transferase levels are characteristic. The late sequelae of chronic HCV infection include serious health consequences such as chronic hepatitis, cirrhosis, and hepatocellular carcinoma. If cirrhosis develops, patients may experience jaundice, splenomegaly, ascites, oesophageal varices, and hepatic encephalopathy. Extrahepatic manifestations are uncommon but may include mixed essential cryoglobulinaemia, membranous or membranoproliferative glomerulonephritis, non-Hodgkin's lymphoma, Sjorgren's syndrome, lichen planus, and porphyria cutanea tarda.
Host Range: Humans. Chimpanzees have been used as experimental hosts.
Infectious Dose: Unknown.
Mode of Transmission: In North America HCV is mainly transmitted parenterally by infected needles, particularly those used by intravenous drug users. Other parenteral routes exist such as blood transfusion, organ transplantation, contaminated medical equipment, and from tattoo and body piercing equipment. However, for the last decade or so the risk of HCV infection through blood transfusion in Canada, and
North America as well, is negligible. Less common routes of HCV transmission are via sexual contact, from sharing razors and/or toothbrushes, and from mother to child during pregnancy and childbirth. **Incubation Period**: Ranges from 2 to 12 weeks.
Communicability: Can be transmitted from person-to-person. Transmission rate between mother and
developing child is influenced by maternal levels of viraemia (greater than 106 copies per ml blood), and also co-infection of the mother with HIV.

Section III - Dissemination

Reservoir:
Humans.

Zoonosis:
None.
Vextors: None.

Section IV - Stability and Viability

Drug Susceptibility: Sensitive to interferon-α (IFN), pegylated interferon, and ribavirin. New antiviral treatments that work by targeting hepatitis C protease and polymerase are currently in clinical trials. **Drug Resistance**: Resistance has been observed to be emerging against IFN and the current methods of therapy, and the outcome of treatment is highly dependent on viral genotype.
Susceptibility to Disinfectants: HCV RNA is readily degraded by 2% glutaraldehyde when added to biological samples at 37°C, and soaking medical equipment (such as gastroendoscopes) in 3%
glutaraldehyde is effective at limiting HCV transmission. Phenolic compounds (0.4 to 3%) are effective at

inhibiting HCV binding and infectivity in VERO cell cultures. Furthermore, treatment of HCV diluted in phosphate buffered saline with 1% non-ionic detergent (Triton X-100) plus 0.3% tri-n-butyl-phosphate leads to inactivation.
Physical Inactivation: HCV is inactivated when incubated at 60°C for 10 hours (pasteurisation). **Survival Outside Host**: HCV is relatively unstable; however, in plasma it can survive drying and environmental exposure to room temperature for at least 16 hours.

Section V - First Aid / Medical

Surveillance: Monitor for symptoms. The initial test for HCV infection is an enzyme immunoassay for HCV antibodies. PCR methods are also used to detect HCV RNA. Other tests include the branched DNA assay and transcription mediated amplification.
Note: All diagnostic methods are not necessarily available in all countries.
First Aid/Treatment: Treatment success rates with antiviral therapy have improved significantly over the last 10 years. Mono-therapy with pegylated interferon (addition of polyethylene glycol to interferon-α) and combined therapy of pegylated interferon with ribavirin, or standard interferon with ribavirin, are
common methods of treating HCV infection.
Immunization: None; however, several vaccines that prevent initial infection or viral persistence, or that clear viraemia in individuals with chronic HCV infections, are in development.
Prophylaxis: Postexposure prophylaxis with immune globulin or antiviral agents is not recommended.

Section VI - Laboratory Hazards

Laboratory-Acquired Infections: Unknown, although seroprevalence studies have reported antibody to
HCV rates of 1% among hospital based (including laboratory workers and healthcare providers) in
Western countries.
Sources/Specimens: Blood, blood products, and bodily fluids, tissues, or equipment contaminated with
HCV infected blood.
Primary Hazards: Needlestick injury, or cuts with sharp instruments.
Special Hazards: None.

Section VII - Exposure Controls / Personal Protection

Risk Group Classification: Risk Group 2.
Containment Requirements: Containment Level 2 facilities, equipment, and operational practices for work involving infectious or potentially infectious materials, animals, or cultures.
Protective Clothing: Lab coat. Gloves when direct skin contact with infected materials or animals is
unavoidable. Eye protection must be used where there is a known or potential risk of exposure to splashes.
Other Precautions: All procedures that may produce aerosols, or involve high concentrations or large volumes should be conducted in a biological safety cabinet (BSC). The use of needles, syringes, and other sharp objects should be strictly limited. Additional precautions should be considered with work involving
animals or large scale activities.

Section VIII - Handling and Storage

Spills: Allow aerosols to settle and, wearing protective clothing, gently cover spill with paper towels and apply an appropriate disinfectant, starting at the perimeter and working towards the centre. Allow sufficient contact time before clean up.
Disposal: Decontaminate all materials for disposal by steam sterilisation, chemical disinfection, and/or incineration.
Storage: In sealed containers that are appropriately labelled.
This is a modified version of the Pathogen Data Sheets from Public Health Agency of Canada (Updated November 2010). The full version can be found here: http://www.phac-aspc.gc.ca/lab-bio/res/psds- ftss/hepc-eng.php

Section 4. Cal/OSHA Exposure Control Plans

This section should include the following **IF APPLICABLE:**

- Blood borne pathogen exposure control plan
- Aerosol transmissible disease exposure control plan

Section 5. SOPs

This section should include SOP's for the following **IF APPLICABLE:**

- Biosafety cabinet use
- Storage and security of material
- Disinfection
- Medical waste handling
- Transportation of material
- Emergency procedures
- Animal Biosafety
- Biological toxins

501 Westwood Plaza, 4th Floor • Los Angeles, CA 90095

Phone: 310-825-5689 • Fax: 310-825-7076 • www.ehs.ucla.edu

Standard Operating Procedures for Biohazardous Incident response

Department: Biological Chemistry Date when SOP was written: 5/8/2015

Date when SOP was approved by the PI: 5/11/2015

Date(s) when SOP was reviewed: 5/11/2015

Principal Investigator: David Eisenberg

Laboratory Phone: 310-206-3642 Office Phone: 310-825-3754

(Name and Phone Number)

Location(s) covered by this SOP: Boyer Hall Rooms 206, 219, 219A, 225, 229, 359

Biosafety Level for each Location: BSL-1 in 219, 219A, 225, 229 BSL-2 in 206, 359

***PURPOSE*:** This SOP covers the emergency response to spills and exposures within the laboratory.

MATERIALS AND EQUIPMENT: *Biohazard spill kit should include:*

- Signage: To inform other personnel of the spill and proved contact information
- PPE: Include gloves, safety glasses and a lab coat/disposable smock
- Brush and Dustpan: To collect broken glass or sharp objects. Brush and dustpan should be decontaminated or disposed of after use. Tongs/forceps are also important for picking up items and broken glass
- Absorbent paper towels
- Red biohazard bags
- Place all items in a durable leak-proof container with a lid (which can be used for transport of waste afterwards, if needed)
- Disinfectant: Although 10% Clorox bleach is recommended as a standard disinfectant in the spill kit, other suitable disinfectants may be used.

PERSONAL PROTECTIVE EQUIPMENT (PPE): At a minimum, the PPE required for a spill cleanup is long pants, closed toed shoes, lab coat, eye protection and disposable gloves. Respiratory protection may be necessary if the possibility of aerosols exists.

PROCEDURES:

EXPOSURES

Serious Injuries

1. Call 911 immediately from a campus phone or 310-825-1491 from a cell phone
2. Administer first aid as necessary; medical care should always be the first priority.
3. If there is potential risk of exposure to infectious agents, advise healthcare provider to minimize potential exposure. Caregivers should wear appropriate personal protective equipment.
4. All medical emergencies must be reported to EH&S immediately.
5. Call the EH&S Hotline at x59797.

Biological and rDNA exposure incidents

ALL exposures or potential exposures should be reported to Biosafety within 8 hours of the incident (x59797).

1. Immediately begin to treat the area of exposure!
    a. For lacerations or breaks in the skin, wash the affected area with antiseptic soap and warm water for 15 minutes.
    b. For exposure to the face, eyes, nose or mouth, flush affected area in eyewash continuously for 15 minutes.

2. After any exposure or potential exposure, employees need to be evaluated by a healthcare professional.
    a. Monday-Friday, 7am-4pm : OHF at 67-120 CHS (Center for Health Sciences), 6th floor, 7th corridor, room 120
    b. All other hours : Employees must go to Ronald Reagan Emergency Room to be evaluated. Please explain that you are there for a potential workplace exposure and need immediate attention
3. Notify PI/supervisor of possible exposure. The PI is responsible for contacting Biosafety within 8 hours of incident
4. Personnel who have been potentially exposed on the job will be provided with post-exposure evaluation and follow-up at no cost to employees who experience "exposure incidents". The post-exposure monitoring periods are dependent on the type of exposure. This time period is related to the various incubation periods of the infectious agents.
5. Non-Employed students must clarify to OHF that there has been a potential lab exposure to receive care at OHF
6. Employees must ensure all worker's compensation paperwork is completed with your department administrator.

Spills Outside of Laboratory Areas

Any spill outside of the laboratory area poses a particular risk for exposure of the general public or environmental contamination. Therefore, do not try and clean this up on your own.

1. Attend to any injuries or exposures
2. Alert others to avoid the area to prevent the spread of contamination
3. Contact the EH&S Biosafety Office (x59797) immediately to assist in spill clean-up. If after hours, contact UCPD (911 from a campus phone), who has the 24/7 on-call numbers for EH&S staff members.

Spills within Laboratory Areas

The overall risk will depend on the agents, operations and personnel involved in the spill and clean-up measures. If in doubt, contact the EH&S Biosafety Office (x63929).

Biosafety Level 1 (BSL1) Spills

1. Notify others in the area, to prevent spread of contamination
2. Remove any contaminated clothing and wash exposed skin with soap and water for 15 minutes.
3. Post signage to inform others of a spill
4. Put on appropriate PPE including, gloves, lab coat, and eye/face protection
5. Cover entire spill zone with paper towels. This should extend past any visible droplets

6. Pour copious amounts of an appropriate disinfectant on the paper towels covering the spill.
7. Allow at least 15 minutes of contact time, possibly more. (This is a great time to notify your PI of the spill)
8. Pick up any pieces of broken glass with forceps or other mechanical device(s) (NOT YOUR HANDS) and place in a sharps container.
9. Pick up all paper towels and disposable materials and place into a biohazard bag.
10. Wash hands with soap and water
11. Notify your PI or supervisor. If this involved recombinant material, notify biosafety within 8 hours at x59797

Biosafety Level 2 (BSL2) and BBP Spills

1. Quickly evacuate everyone from the room, avoiding inhaling aerosols as much as possible
2. Close door, and post with a warning sign.
3. Remove contaminated clothing, turning exposed areas inward, and place in a biohazard bag.
4. Wash all exposed skin with soap and water.
5. Inform PI and/or supervisor, and notify the EH&S Biosafety Program at x59797.
6. Wait at least 30 minutes to reenter the room to allow aerosols to disperse.
7. Assemble clean-up materials (disinfectant, paper towels, biohazard bags, and forceps)
8. Put on protective clothing (lab coat, eye/face protection, utility gloves, and booties if necessary). Depending on the nature of the spill, it may be advisable to wear a HEPA filtered respirator instead of a surgical mask.
9. Once you re-enter the room take a minute to assess all areas that may have been contaminated with the spill, including furniture, walls, cabinets, etc. Take care to avoid stepping in any contaminated areas.
10. Cover the area with paper towels making sure to cover all contaminated surfaces.
11. Carefully pour disinfectant on the paper towels working from the outside of the spill inwards. Use more concentrated disinfectant as it is diluted by the spill.
12. Leave the room and allow at least a 30 minute contact time.
13. Clean up the spill area. Pick up any sharp objects with forceps or other mechanical devices (not your hands!) and discard in a sharps container. Place all wet paper towels in a biohazard bag.
14. If broken glass or sharps are involved only use a mechanical means, such as an autoclavable broom and dustpan to pick up any paper towels, since there may be sharps under the paper towels, and place all materials into a sharps container. Smaller pieces of glass may be collected with cotton or paper towels held with forceps. If no sharps were involved in the spill discard the materials into an autoclave bag.
15. Once you have cleaned up all items and paper towels, you must disinfectant the area again.

16. Spray the area with an approved disinfectant or freshly prepared 10% household bleach solution.
17. Allow a 30 minute contact time before wiping up. Make sure to wipe surrounding areas, where the spill may have splashed.
18. Place all contaminated paper towels and any contaminated protective clothing into a biohazard bag and autoclave or dispose in the appropriate container.
19. Wash hands and exposed skin areas with soap and water.
20. Your PI must clear the laboratory to allow people to begin their normal work once the spill has been cleaned up

WASTE DISPOSAL: *Please describe procedures for the following waste streams. If the waste stream listed below does not apply, please delete.*

1. All solid waste must be disposed of as biohazardous in the correct medical waste stream.

2. All liquid waste must be <u>correctly decontaminated before</u> disposal as either chemical waste or with copious amounts of water down the sanitary sewer

3. For mixed waste, please refer to waste SOPs or contact EH&S

Section 6. References

This section should include the following **IF APPLICABLE:**

- Cal/OSHA BBP standard
- Cal/OSHA ATD standard
- Applicable Sections of NIH Guidelines
- Applicable Sections of CDC BMBL for containment

Other useful links:

i. Updated US Public Health Service Guidelines for Management of Occupational Exposures to Human Immunodeficiency Virus and Recommendations for Postexposure Prophylaxis (2013).

ii. Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis (2001)

Cal/ OSHA Bloodborne Pathogen Standard - 5193

This standard applies to all workers who could be potentially exposed to blood or other potentially infectious materials in a clinical, research or teaching operation, including:

- *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 other body fluid that is visibly contaminated with blood
  - all body fluids in situations where it is difficult or impossible to differentiate between body fluids such as emergency response

- *Any unfixed tissue or organ* (other than intact skin) from a human (living or dead)
- *Any of the following,* if known or reasonably likely to contain or be infected with HIV, HBV, or HCV:
  1. *Cell, tissue, or organ cultures* from humans or experimental animals;
  2. *Blood, organs, or other tissues from experimental animals; or*
  3. *Culture medium or other solutions.*

California Code of Regulations, Title 8, Section 5193. Cal/OSHA acknowledges that the needs and resources of organizations with employees who have occupational exposure to blood or other potentially infectious materials (OPIM) vary widely.

Contents:

A Best Practices Approach for Reducing Bloodborne Pathogens Exposure:
http://www.dir.ca.gov/dosh/dosh_publications/bbpbest1.pdf

Safety & Health Fact Sheet : http://www.dir.ca.gov/dosh/dosh_publications/bbpfct.pdf
Cal/OSHA Exposure Control Plan for Bloodborne Pathogens:
http://www.dir.ca.gov/dosh/dosh_publications/expplan2.pdf

To see the full document please visit: https://www.dir.ca.gov/title8/5193.html

From the BBP standard under Research Laboratories; Special Practices

1. *Laboratory doors shall be kept closed* when work involving HIV, HBV or HCV is in progress.
2. *Contaminated materials* that are to be decontaminated at a site away from the work area shall be placed in a durable, leakproof, labeled or color-coded container that is closed before being removed from the work area.
3. *Access to the work area* shall be limited to authorized persons. Written policies and procedures shall be established whereby only persons who have been advised of the potential biohazard, who meet any specific entry requirements, and who comply with all entry and exit procedures shall be allowed to enter the work areas and animal rooms.
4. *When OPIM or infected animals* are present in the work area or containment module, a hazard warning sign incorporating the universal biohazard symbol shall be posted on all access doors. The hazard warning sign shall comply with subsection (g)(1)(B) of this standard.
5. *All activities involving OPIM* shall be conducted in biological safety cabinets or other physical containment devices within the containment module. No work with these OPIM shall be conducted on the open bench.
6. *Laboratory coats,* gowns, smocks, uniforms, or other appropriate protective clothing shall be used in the work area and animal rooms. Protective clothing shall not be worn outside of the work area and shall be decontaminated before being laundered.
7. *Special care shall be taken* to avoid skin contact with OPIM. Gloves shall be worn when handling infected animals and when making hand contact with OPIM is unavoidable.
8. *Before disposal,* all waste from work areas and from animal rooms shall either be incinerated or decontaminated by a method such as autoclaving known to effectively destroy bloodborne pathogens.
9. *Vacuum lines* shall be protected with liquid disinfectant traps and HEPA filters or filters of equivalent or superior efficiency and which are checked routinely and maintained or replaced as necessary.
10. *Hypodermic needles and syringes* shall be used only for parenteral injection and aspiration of fluids from laboratory animals and diaphragm bottles. Only needle-locking syringes or disposable syringe-needle units (i.e., the needle is integral to the syringe) shall be used for the injection or aspiration of OPIM. Extreme caution shall be used when handling needles and syringes. A needle shall not be bent, sheared, replaced in the sheath or guard, or removed from the syringe following use. The needle and syringe shall be promptly placed in a puncture-resistant container and autoclaved or decontaminated before reuse or disposal.
11. *All spills* shall be immediately contained and cleaned up by appropriate professional staff or others properly trained and equipped to work with potentially concentrated infectious materials.
12. *A spill or accident* that results in an exposure incident shall be immediately reported to the laboratory director or other responsible person.
13. *Written biosafety procedures* shall be prepared and adopted into the Exposure Control Plan of subsection (c)(1). Personnel shall be advised of potential hazards, shall be required to read instructions on practices and procedures, and shall be required to follow them.

HIV, HBV and HCV research laboratories shall meet the following criteria:

- *Each laboratory* shall contain a facility for hand washing and an eye wash facility which is readily available within the work area.

OSHA® FactSheet

OSHA's Bloodborne Pathogens Standard

Bloodborne pathogens are infectious microorganisms present in blood that can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV), the virus that causes AIDS. Workers exposed to bloodborne pathogens are at risk for serious or life-threatening illnesses.

Protections Provided by OSHA's Bloodborne Pathogens Standard

All of the requirements of OSHA's Bloodborne Pathogens standard can be found in Title 29 of the Code of Federal Regulations at 29 CFR 1910.1030. The standard's requirements state what employ- ers must do to protect workers who are occupa- tionally exposed to blood or other potentially infectious materials (OPIM), as defined in the stan- dard. That is, the standard protects workers who can reasonably be anticipated to come into con- tact with blood or OPIM as a result of doing their job duties.

In general, the standard requires employers to:

- Establish an exposure control plan. This is a written plan to eliminate or minimize occupa- tional exposures. The employer must prepare an exposure determination that contains a list of job classifications in which all workers have occupational exposure and a list of job classifi- cations in which some workers have occupa- tional exposure, along with a list of the tasks and procedures performed by those workers that result in their exposure.
- Employers must update the plan annually to reflect changes in tasks, procedures, and posi- tions that affect occupational exposure, and also technological changes that eliminate or reduce occupational exposure. In addition, employers must annually document in the plan that they have considered and begun using appropriate, commercially-available effective safer medical devices designed to eliminate or minimize occupational exposure. Employers must also document that they have solicited input from frontline workers in identifying, eval- uating, and selecting effective engineering and work practice controls.
- Implement the use of universal precautions (treating all human blood and OPIM as if known to be infectious for bloodborne pathogens).
- Identify and use engineering controls. These are devices that isolate or remove the blood- borne pathogens hazard from the workplace. They include sharps disposal containers, self-sheathing needles, and safer medical devices, such as sharps with engineered sharps-injury protection and needleless systems.
- Identify and ensure the use of work practice controls. These are practices that reduce the possibility of exposure by changing the way a task is performed, such as appropriate practices for handling and disposing of contaminated sharps, handling specimens, handling laundry, and cleaning contaminated surfaces and items.
- Provide personal protective equipment (PPE), such as gloves, gowns, eye protection, and masks. Employers must clean, repair, and replace this equipment as needed. Provision, maintenance, repair and replacement are at no cost to the worker.
- Make available hepatitis B vaccinations to all workers with occupational exposure. This vac- cination must be offered after the worker has received the required bloodborne pathogens training and within 10 days of initial assignment to a job with occupational exposure.
- Make available post-exposure evaluation and follow-up to any occupationally exposed work- er who experiences an exposure incident. An exposure incident is a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or OPIM. This evaluation and follow-up must be at no cost to the worker and includes documenting the route(s) of exposure and the circumstances

under which the exposure incident occurred; identifying and testing the source individual for HBV and HIV infectivity, if the source individual consents or the law does not require consent; collecting and testing the exposed worker's blood, if the worker consents; offering post- exposure prophylaxis; offering counseling; and evaluating reported illnesses. The healthcare professional will provide a limited written opin- ion to the employer and all diagnoses must remain confidential.

- Use labels and signs to communicate hazards. Warning labels must be affixed to containers of regulated waste; containers of contaminated reusable sharps; refrigerators and freezers containing blood or OPIM; other containers used to store, transport, or ship blood or OPIM; contaminated equipment that is being shipped or serviced; and bags or containers of con- taminated laundry, except as provided in the standard. Facilities may use red bags or red containers instead of labels. In HIV and HBV research laboratories and production facilities, signs must be posted at all access doors when OPIM or infected animals are present in the work area or containment module.
- Provide information and training to workers. Employers must ensure that their workers receive regular training that covers all elements of the standard including, but not limited to: information on bloodborne pathogens and dis- eases, methods used to control occupational exposure, hepatitis B vaccine, and medical eval- uation and post-exposure follow-up procedures. Employers must offer this training on initial assignment, at least annually thereafter, and when new or modified tasks or procedures affect a worker's occupational exposure. Also, HIV and HBV laboratory and production facility workers must receive specialized initial training, in addition to the training provided to all work- ers with occupational exposure. Workers must have the opportunity to ask the trainer ques- tions. Also, training must be presented at an educational level and in a language that work- ers understand.
- Maintain worker medical and training records. The employer also must maintain a sharps injury log, unless it is exempt under Part 1904 -- Recording and Reporting Occupational Injuries and Illnesses, in Title 29 of the Code of Federal Regulations.

Additional Information

For more information, go to OSHA's Bloodborne Pathogens and Needlestick Prevention Safety and Health Topics web page at: https://www.osha.gov/SLTC/bloodbornepathogens/index.html.

To file a complaint by phone, report an emergency, or get OSHA advice, assistance, or products, con- tact your nearest OSHA office under the "U.S. Department of Labor" listing in your phone book, or call us toll-free at (800) 321-OSHA (6742).

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; the teletypewriter (TTY) number is (877) 889-5627.

For assistance, contact us. We can help. It's confidential.

Occupational Safety
and Health Administration
www.osha.gov 1-800-321-6742

DSG 1/2011

OSHA®

Cal/OSHA Aerosol Transmissible Diseases Standard

Title 8 CCR; Section 5199 and 5199.1
Subchapter 7. General Industry Safety Orders
Group 16. Control of Hazardous Substances
Article 109. Hazardous Substances and Processes

Two Cal/OSHA Aerosol Transmissible Diseases regulations exist to ensure public health practices in infection control in human healthcare, animal healthcare and research facilities, service providers and operations. The intended purpose is to prevent worker illness from infectious diseases that can be transmitted by inhaling air that contains viruses, bacteria or other disease organisms.

Section 5199 applies to human healthcare and research facilities and operations that contain or are reasonably anticipated to contain aerosol transmissible pathogens, including:

1. Health Care Facilities, Services, or Operations
2. Laboratory Facilities, Services and Operations
3. Public Safety
4. Emergency Response
5. Public Health and Service Organizations (including homeless shelters, drug treatment or communicable disease screening programs)
6. HVAC maintenance, renovation, service or repair for equipment and building areas

Section 5199.1 applies to animal care and housing operations which may **contain zoonotic aerosol transmissible diseases** [https://www.dir.ca.gov/title8/5199-1.html]

1. Management, capture, sampling, transportation or disposal of wild birds or wildlie
2. Farms producing animals or animal products, including the transport or importers of animals and untreated animal products, byproducts, or wastes to or from farms
3. Slaughterhouses and initial processing facilities for untreated animal products, byproducts or wastes
4. Veterinary, animal inspection and other animal health operations
5. Laboratory operations involving samples, cultures or other materials potentially containing zoonotic aerosol transmissible pathogens
6. Zoonotic ATP incident response operations

Lists of Aerosol Transmissible Diseases and Pathogens can be found at the following reference pages:

ATD Standard Appendix A: Aerosol Transmissible Diseases/Pathogens
ATD Standard Appendix D: Aerosol Transmissible Pathogens – Laboratory

Requirements include:

1. Written **aerosol transmissible disease (ATD) exposure control plan**, including engineering, work practice controls and PPE (particularly respiratory protection) should be explicitly documented
2. Written infection control measures,
3. Employee training requirements,
4. Provision of medical services and
5. Recordkeeping.

The ATD regulations can be found at:
http://www.cdph.ca.gov/programs/ohb/Pages/ATDStd.aspx
and https://www.dir.ca.gov/title8/5199-1.html (zoonotic)

Contents (ATD and ATD-Laboratory)

(a) Scope and Application
(b) Definitions
(c) Referring Employers
(d) Aerosol Transmissible Diseases Exposure Control Plan
(e) Engineering and Work Practice Controls and Personal Protective Equipment
(f) Laboratories
(g) Respiratory Protection
(h) Medical Services
(i) Training
(j) Recordkeeping
Appendix A: Aerosol Transmissible Diseases/Pathogens
Appendix B: Alternate Medical Evaluation Questionnaire
Appendix C-1: Vaccination Declination Statement
Appendix C-2: Seasonal Influenza Vaccination Declination Statement
Appendix D: Aerosol Transmissible Pathogens – Laboratory
Appendix E: Aerosol Transmissible Disease Vaccination
Appendix F: Sample Screening Criteria (if health care provider unavailable) Appendix G: Information for Respirator Fit Test Screening

Contents (ATD-Zoonotic)

(a) Scope and Application and Definitions
(b) Exposure to Potentially infectious Wildlife
(c) When the USDA or the CDFA issues a quarantine order
(d) Every Employer with Work Operations involving handling, culling, transporting, killing, eradicating or disposing of animals infected with zoonotic ATPs, or the cleaning and disinfection of areas uses, or previously used, to contain such animals or their wastes
(e) Recordkeeping

To find out more information please visit:
http://www.cdph.ca.gov/programs/ohb/Pages/ATDStd.aspx and https://www.dir.ca.gov/title8/5199-1.html

NIH Guidelines For Research Involving Recombinant Or Synthetic Nucleic Acid Molecules Department Of Health And Human Services

November 2013

National Institutes of Health, Office of Biotechnology Airfares (http://oba.od.nih.gov)

NIH Guidelines) detail safety practices and containment procedures for basic and clinical research involving recombinant or synthetic nucleic acid molecules, including the creation and use of organisms and viruses containing recombinant or synthetic nucleic acid molecules. Institutional Biosafety Committees (IBCs) are the cornerstone of institutional oversight of recombinant DNA research.

Please check which sections are applicable to your lab and verify that your workers have read those sections

Table Of Contents

For the full document please refer to: http://osp.od.nih.gov/office-biotechnology-activities/biosafety/nih-guidelines

Biosafety in Microbiological and Biomedical Laboratories
5th Edition

Centers for Disease Control and Prevention; National Institutes of Health
HHS Publication No. (CDC) 21-1112; ***Revised December 2009***

Biosafety in Microbiological and Biomedical Laboratories (BMBL) has become the cornerstone of biosafety practice and policy and the industry standard for biosafety in the U.S. Although designed to be advisory in nature, its guidelines are codified in several regulations or terms/conditions of funding agencies. UCLA IBC and Biosafety have adopted these industry standards for UCLA.

Please check which sections are applicable to your lab and verify that your workers have read those sections

Contents

To read the full document please visit: http://www.cdc.gov/biosafety/publications/bmbl5/