SUBJECT AREA CONTENT

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[Introduction] [Contents] [Forms/Exhibits] [References] [Definitions] [Instructions] [Keywords] [Revision History]

Management System: Worker Safety and Health			
Subject Area: Natural Hazards in the Environment VIEW/PRINT ALL (No Exhibits and Forms)			
Effective Date: **Apr 16, 2013** (Rev 5.0) Periodic Review Due: **Apr 16, 2018**	Subject Matter Expert: Timothy Green	Management System Executive: Ed Nowak	Management System Steward: Gail Mattson

Introduction

Natural hazards in the environment create special concerns for workers occupationally exposed in outdoor settings and work settings where environmental hazards may be present, and to guests and visitors in certain outdoor settings.

Environmental hazards may include infectious diseases found on Long Island and biological and physical agents such as

- Insect-borne diseases, including West Nile Virus, Eastern Equine Encephalitis;
- Tick-borne diseases, including Babesiosis, Lyme Disease, Rocky Mountain Spotted Fever, Ehrlichiosis, and Anaplasmosis;
- Animal-borne diseases, including Histoplasmosis and Cocciodiosis, Rabies, Hanta Virus; Tetanus;
- Stings & Bites: Bee/Wasp stings; Chigger “bites;” Spider bites; Snake bites;
- Poisonous plants: Poison Ivy, Oak, and Sumac;
- Lightning
- Ultraviolet radiation: Sunburn and snowblindness.

This subject area provides procedures for ensuring safe work at BNL for personnel who have the potential for occupational exposure to environmental hazards. These requirements and guidelines apply to all BNL and non-BNL staff, including outside contractors and visitors.

This subject area does not contain information on preventing communicable disease. See the Bloodborne Pathogens Subject Area.

Contents

Section	Overview of Content (see section for full process)
1. Recognizing and Controlling Occupational Exposure to Environmental Hazards	• Determine if personnel have potential occupational exposure to environmental hazards.

	Obtain training. • Voluntarily notify supervisor or OMC of any pre-disposition to environmental hazards that can create medical emergencies.
2. Recognizing and Controlling Exposure to Environmental Hazards in On-site Housing and Guest Activities	• Determine if personnel or attendees have potential exposure to environmental hazards. • Implement exposure controls listed in the Natural Environmental Hazard Work Control Recommendations or other feasible measures.

Definitions

Exhibits

Natural Environmental Hazards at BNL 1-page Information Sheet
Natural Environmental Hazards Work Control Recommendations

Forms

None

Training Requirements and Reporting Obligations

This subject area contains training requirements. See the Training and Qualifications Web Site.

This subject area does not contain reporting obligations.

External/Internal Requirements

Requirement Number	Requirement Title
29 CFR 1910	Labor/Occupational Safety and Health Standards
ACGIH TLVs	Threshold Limit Values for Chemical Substances and Physical Agents
BSA Contract No. DE-AC02-98CH10886 - Clause H.3 (Contractor Assurance System)	Contractor Assurance System
BSA Contract No. DE-AC02-98CH10886 - Clause I.119 (DEAR 970.5223-1)	Integration of Environment, Safety and Health into Work Planning and Execution (DEC 2000)

References

Asbestos Subject Area

Bloodborne Pathogens Subject Area

Chiggers, Missouri Department of Conservation

Rabies, Centers for Disease Control and Prevention

Training and Qualifications Web Site

Vaisala Lightning Explorer, Vaisala Web Site

West Nile Virus, Centers for Disease Control and Prevention

Standards of Performance

Managers shall analyze work for hazards, authorize work to proceed, and ensure that work is performed within established controls.

All staff and users shall identify, evaluate, and control hazards in order to ensure that work is conducted safely and in a manner that protects the worker, the environment, and the public.

The only official copy of this file is the one on-line in SBMS.

Before using a printed copy, verify that it is the most current version by checking the *effective date*.

https://sbms.bnl.gov/sbmsearch/subjarea/125/125_SA.cfm

PROCEDURE: RECOGNIZING AND CONTROLLING OCCUPATIONAL EXPOSURE TO ENVIRONMENTAL HAZARDS

Management System: Worker Safety and Health		
Subject Area: Natural Hazards in the Environment		
1. Recognizing and Controlling Occupational Exposure to Environmental Hazards		
Effective Date: **Apr 16, 2013**	Subject Matter Expert: Timothy Green	Management System Executive: Ed Nowak

Applicability

This information applies to BNL staff and non-BNL staff whose work includes time spent in settings where exposure to natural environmental hazards is possible, including the following:

- Outdoors;
- Crawl spaces and attics;
- Areas where animal droppings are present.

Required Procedure

Step 1	BNL Organizations review the exhibit Natural Environmental Hazards Work Control Recommendations to determine if they have personnel with potential occupational exposure to known environmental hazards.
Step 2	Supervisors/sponsors of organizations with potential occupational exposure to environmental hazards review and select feasible

	exposure controls listed in the exhibit Natural Environmental Hazards Work Control Recommendations or select equivalent measures.
Step 3	Via the work planning and control process, the Supervisors/sponsors identify required training on appropriate natural hazards (see the Training and Qualifications Web Site). Available web classes include Lyme Disease and Tick/Chigger Bite Prevention (TQ-LYME1).
Step 4	Individuals voluntarily notify their supervisor or the Occupational Medicine Clinic (OMC) of any pre-disposition to environmental hazards that can create medical emergencies (such as significant allergies to bee stings). Supervisors notify the OMC of workers with pre-dispositions. OMC recommends preventative and treatment preparation measures.
Step 5	When workers with a pre-disposed, life threatening medical condition (such as significant allergies to bee stings) work alone, supervisors or the work planner provide a direct communication method (such as a cell phone or walkie-talkie) to someone who can seek assistance.
Step 6	When workers will be in remote locations, supervisors or the work planner provide a direct communication method (such as a cell phone or walkie-talkie) to someone who can seek assistance.

Guidelines

Organizations should plan work and individuals should use the feasible personal engineering controls, administrative controls, and protective equipment listed in the Natural Environmental Hazards Work Control Recommendations when work involves exposure to environmental hazards.

An employee, guest, user, visitor, or contractor who finds an attached tick can go to the Occupational Medicine Clinic (OMC) in Building 490 during OMC's hours of operations to have the tick removed by medical personnel.

References

Training and Qualifications Web Site

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https://sbms.bnl.gov/sbmsearch/subjarea/125/125_pro1.cfm

PROCEDURE: RECOGNIZING AND CONTROLLING EXPOSURE TO ENVIRONMENTAL HAZARDS IN ON-SITE HOUSING AND GUEST ACTIVITIES

Management System: Worker Safety and Health

Subject Area: Natural Hazards in the Environment		
2. Recognizing and Controlling Exposure to Environmental Hazards in On-site Housing and Guest Activities		
Effective Date: **Apr 16, 2013**	Subject Matter Expert: Timothy Green	Management System Executive: Ed Nowak

Applicability

This information applies to anyone who

- Lives on-site in BNL housing, apartment, or guest rooms;
- Participates in BNL-organized activities where environmental hazards are present.

Required Procedure

Step 1	BNL Organizations sponsoring guests or events review the exhibit Natural Environmental Hazards Work Control Recommendations and determine if they have personnel or attendees with potential exposure to environmental hazards.
Step 2	BNL Organizations with potential exposure to environmental hazards implement the exposure controls listed in the Natural Environmental Hazards Work Control Recommendations or other appropriate measures as feasible (e.g., closely mow lawns in areas were activities will be held, limit access to wooded areas, provide shading over exhibits).

Guidelines

BNL organizations can provide a copy of the exhibit Natural Environmental Hazards at BNL 1-page Information Sheet to guests or attendees to events with potential exposure to environmental hazards.

BNL Organizations should recommend, in literature distributed on events/programs, the dress/equipment to minimize exposure to environmental hazards.

A resident of a BNL housing unit who finds an attached tick can go to the Occupational Medicine Clinic (OMC) in Building 490 during the OMC's hours of operations to have the tick removed by medical personnel.

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DEFINITIONS

Definition: Natural Hazards in the Environment

Term	Definition
administrative controls	Controls that reduce the likelihood of exposure by altering the manner in which a task is performed. Examples include shortening work duration, rotating workers, and scheduling work in periods when the hazard is not prevalent.
engineering controls	Controls that isolate or remove an environmental hazard from the workplace. Examples include controls such as mowing lawns and shrubs to remove tick habitats and removing wasp nests.
environmental hazard	A biological or physical hazard found in the environment or of environmental origin that can cause illness or injury to personnel.
personal protective equipment (PPE)	Specialized equipment worn by an employee for protection against a hazard. Examples include protective clothing, insect repellents, and poisonous plant oil barrier creams.

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NATURAL ENVIRONMENTAL HAZARDS AT BNL 1-PAGE INFORMATION SHEET

The Paper Wasp and other stinging insects are common at BNL and can cause a painful sting. Most people stung will experience a "local" reaction with redness, pain, swelling and some itching only at the sting site, which usually goes away within several hours. However, for people who are allergic to the venom of the insect, they may develop a mild to life threateningly severe allergic reaction. Avoid areas that bees and wasps frequent e.g., open dustbins, uncovered cold drink cans.

Insects (especially mosquitoes) can carry diseases and transmit them to human via “bites”. The diseases that have occurred sporadically on Long Island in recent years are West Nile Virus, Eastern Equine Encephalitis, and Malaria.

Cover as much of the skin as possible by wearing shirts with long sleeves, long pants and socks whenever possible. Avoid use of perfumes and colognes when working outdoors during peak times when mosquitoes may be active; mosquitoes may be more attracted to individuals wearing perfumes and colognes. Use insect repellents containing DEET, oil of lemon eucalyptus, or Picaridin. Spray insect repellent on the outside of your clothing, as it is possible for mosquitoes to bite through thin clothing.

Lightening: During thunderstorms, cloud-to-ground lightning is a potential killer if a person is in the path of the lightning discharge. Watch for weather signs of clouds and thunder.

- Lightning can strike as far as 10 miles [16 km] away from the rain area. That's about the distance you can hear thunder. When a storm is 10 miles [16 km] away (i.e. you hear thunder), seek shelter.
- Wait at least 30 minutes after the last clap of thunder before leaving shelter. Don't be fooled by sunshine or blue sky.

Safe areas include fully enclosed metal vehicles with windows up and substantial and permanent buildings. Unsafe areas include small structures (including huts, rain shelters, canopies, small picnic shelters), metallic objects like fences, gates, instrumentation and electrical equipment, wires, and power poles, trees.
If isolated from shelter during close-in lightning, adopt a low crouching position with feet together:
A. **Crouch down***.* Put feet together. Place hands over ears to minimize hearing damage from thunder.
B. Avoid proximity (minimum of 15 ft. [4.6 m]) to other people.
Do not lie down or place your hands on the ground.

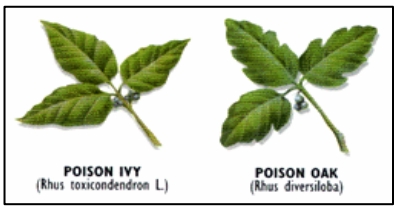
Severe weather: BNL is subject to snow storms, high wind conditions from hurricanes, tornadoes, and microburst (intense downdraft of wind in small areas) and high temperatures (>81°F [>27.2^{o}C] that can lead to heat stress). Be observant of weather conditions and curtail activities and seek shelter when conditions are dangerous.

Rabies is a viral disease of mammals transmitted through the bite of an animal with rabies (a rabid animal) like a raccoon, skunk, feral cat or bat. Avoid direct contact with unfamiliar animals. Do not handle, feed, or unintentionally attract wild animals with open garbage cans or litter. Contact Facility & Operation Directorate at x-2468 for assistance in the capture and removal of animals from buildings.

BNL and Long Island are not home to any snakes that are dangerous to humans. The Eastern Hognose Snake, with rear fangs, is slightly venomous, but harmless to people. Do not pick up or play with any snake. Most serious snakebites occur when someone deliberately provokes a snake. Wear long pants and boots. Avoid areas where snakes may be hiding -- under rocks, logs, etc.

Four tick-borne diseases occur on Long Island. Not all ticks are infected with a disease and not all species of ticks carry all the diseases. The most likely diseases to occur from a tick bite on Long Island are Lyme Disease, Babesiosis, Ehrlichiosis, Anaplasmosis, and Rocky Mountain Spotted Fever.
The best preventative measures are proper dress when in tick infested areas and prompt removal of tick before they can attach and transmit the disease agents. When possible, stay on paved surfaces, bare soil and sand, and large expanses of well-mown grass. Stay away from the edge of fields at the shrub line, avoid entering wooded areas, and avoid walking in high grass near wooded areas. Wear light-colored clothing (for easy tick discovery). Tuck shirt into pants. Wear long pants and socks. Tuck the pant legs into the socks. This makes a barrier that keeps ticks off the skin of the legs. Supplement the clothing protection with the use of repellents.

Poison Ivy, Poison Oak, and Poison Sumac can cause skin irritation and allergic reactions in many people. The reaction in the skin is caused by contact with an oily irritant urushiol found in the plant’s stem, roots, branches, leaves, and fruit; on contaminated clothes & tools; and on pets.
Prevent the Rash by: Applying a Barrier Cream on exposed skin. Wear long pants, long sleeve shirt, shoes and socks. Wear cotton or leather gloves. Decontaminate clothing by laundering in a washing machine with detergent. Clean tools, gloves, etc. Wash infected skin as soon as possible.



Natural Environmental Hazards
Work Control Recommendations

TABLE OF CONTENTS

Topic	Page
Area Characterizations	2
Bee/Wasp Stings	4
Bird Dropping Diseases	8
Chigger "Bites"	10
Hanta Virus	13
Insect-borne Diseases	15
Lightning	18
Poisonous Plants	20
Rabies	24
Spider Bites	27
Snakebites	30
Tetanus	32
Tick-borne Diseases	34
Ultraviolet Radiation – Sunburns and Snowblindness	40

Note: This document provides information and recommendations on protective measures which can be used to reduce the risk to safety & health hazards found naturally in the environment at BNL. All recommendations in this document are best management practices or actions that should be implemented when practical and feasible. Required actions for any natural occurring hazard are listed in the Subject Area: Natural Hazards in the Environment.

AREA CHARACTERIZATIONS

CRAWL SPACES

Hazards that are potentially found in crawl spaces include:

- Asbestos from pipe insulation (See Asbestos Subject Area)
- Animal droppings or live wild animals, thus a risk for
  - Hanta Virus
  - Rabies
  - Bites/Scratches
- Mold/fungal growth
- Spider bites

ATTICS AND ABOVE SUSPENDED CEILINGS

Hazards that are potentially found in attics include:

- Asbestos from pipe insulation (See Asbestos Subject Area)
- Animal droppings or live wild animals, thus a risk for
  - Hanta Virus
  - Rabies
  - Bites/Scratches
- Bird Droppings, thus a risk for
  - Histoplasmosis
  - Coccidioidomycosis
- Spider bites
- Bee/wasp stings
- Heat Stress

OUTDOOR FIELD WORK

Hazards that are potentially found in outdoor work include

- Tick-borne Diseases
- Insect-borne Diseases
- Animal-borne diseases if bitten by wild animals, risk for Rabies
- Heat Stress
- Cold Stress
- Ultraviolet non-ionizing radiation from sunlight
- Bee/wasp stings
- Chigger "bites"
- Spider bites
- Snake bites
- Poisonous plants - Poison Ivy, Oak, and Sumac
- Lightning

Note: While not a natural hazard, be watchful for legacy ordinances when digging and entering undeveloped lands at BNL. If suspect objects are found, do not handle, and call x-2222 (344-2222).

ABANDONED BUILDINGS & NEGLECTED ROOM CLEAN-OUTS

Hazards that are potentially found in abandoned buildings include

- Asbestos from pipe insulation (See Asbestos Subject Area)
- Animal dropping or live rodents, thus a risk for
  - Hanta Virus
  - Rabies
- Bird Droppings, thus risk for
  - Histoplasmosis
  - Coccidioidomycosis
- Bee/wasp stings
- Spider bites

Bee/Wasp Stings

I. HAZARD OVERVIEW

The sting of a bee or wasp is initially quite painful. Most people stung will experience a "local" reaction with redness, pain, swelling, and some itching only at the sting site, which usually goes away within several hours.

However, for people who are allergic to the venom of the insect, they may develop mild to life threateningly severe allergic reactions. Unlike most other allergies, insect allergy can cause a life-threatening disruption to breathing and circulatory systems called anaphylactic shock.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

Avoid areas with Bees/Wasps and Avoid Attracting Insects Stinging incidents often occur when nesting areas of social insects are disturbed. Be observant of the area around you. If you see insects flying to and from a particular place, avoid it.

- Avoid areas that bees and wasps frequent e.g., open dustbins, uncovered cold drink cans.
- Minimize activity when bees are most angry: cloudy, dark rainy days in early spring of the year.
- Wasps and bees are drawn to flower fragrances and clothing with bright colors (white is safest).
- Since perfumes, aftershave, hair spray, hair tonics, suntan lotions, heavy-scented shampoos, soaps and many other cosmetics attract insects, they should be avoided.
- Avoid drinking fruit juices and eating fruit out of doors.
- Wear covered shoes and avoid walking barefoot on flowering fields or clover-covered lawns.
- Avoid shiny buckles and jewelry.
- Wear a hat.
- Don't wear bright, colored, loose-fitting clothing, which may attract and trap insects. Flowery prints and black especially attract insects. Wear light-colored (white) clothing; preferably cotton (never wool).
- Carefully shake out any clothing left on the ground.
- Use a cloth to trap insects and prevent being stung.
- Don't disturb a beehive. Wasp nests should have petrol or kerosene applied to them and destroyed.
- Have a licensed pesticide applicator or pest control operator apply pesticides.
- Insect repellent applied to your skin or clothing will not deter stinging insects.
- Provide communication equipment for outdoor workers in remote locations.
- Provide communication equipment for outdoor workers working alone.

Sting Prevention

- If a wasp or bee approaches, stay still and do not try to swat the insect as this may frighten it. If it lands, gently try to blow it off the skin.
- Should a bee or wasp fly near you, slowly raise your arms to protect your face and stand still or move slowly away through bushes or indoors to escape. Never move rapidly, which often provokes attack.
- Never strike or swing at a wasp or bee against your body since it may be trapped causing it to sting. If crushed, it could incite nearby yellow jackets into a frenzied attack. The wasp venom contains a chemical "alarm pheromone," when released into the air, it signals guard wasps to come and sting whomever and whatever gets in their way.
- If a swarm of bees approach, run for shelter as bees are slow fliers and can normally be outrun.
- Remain calm when a bee or wasp lands on your skin to inspect a smell or to get water if you are sweating heavily. The insect will eventually leave of its own accord.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS

For more information, contact: OMC at x-3670

Most people stung will experience a "local" reaction with redness, pain, swelling and some itching only at the sting site. If the reaction progresses quickly to sites other than the sting site or is followed by difficult breathing or choking at the throat, the person is experiencing a "systemic" allergic reaction (anaphylaxis) requiring emergency medical treatment.

Normally some redness and swelling will result from the sting, but this usually resolves in a few hours. In the allergic individual, a more long lasting and severe reaction will occur.

- A mild reaction will include intense redness, swelling, itching and pain, all occurring within minutes.
- More severe reactions include generalized swelling and itching, faintness, sweating, a pounding headache, stomach cramps or vomiting, a feel of impending doom, a tight chest or choking sensation with swelling of the throat and in extreme cases anaphylactic shock with death resulting.
- Life threatening reactions are more likely to occur in people who are already known to be very allergic to bee venom, older people with pre-existing heart and chest complaints, or with multiple stings.
- Severe allergic reaction can start in a few minutes after the sting occurs. The person may feel dizzy, nauseated, and weak. There may be stomach cramps and diarrhea. There can be itching around the eyes, a warm feeling or coughing, hives breaking out, followed with vomiting and swelling, wheezing, difficult breathing (shortness of breath) or swallowing, hoarse speech, drop in blood pressure, shock, unconsciousness and darkened skin following. Reactions may occur in a few minutes with most deaths within 30 minutes, but some within 15 minutes, and some in five minutes or less.
- People who are prone to severe reactions to bee stings should carry an adrenalin injection with them for self-administration. Others should carry antihistamine pills. All bee allergic patients should wear a Medic Alert bracelet.
- A person may be stung many times during his lifetime — and have only normal reactions — then suddenly one sting will produce a strong allergic reaction. Doctors are not sure why a person develops such as sensitivity or why the sensitivity may last fewer than 3 months or more than 25 years.
- Once systemic sensitivity occurs, it almost always increases in severity with each following sting (varies in individual persons). The more quickly symptoms appear after the sting, the more severe the reaction.

Occasionally, a person becomes involved in a situation where he or she is stung many times before being able to flee from the nesting site. Depending on the number of stings, the person may just hurt a lot, feel a little sick, or feel very sick.

- Humans can be killed if stung enough times in a single incident. With honeybees the toxic dose (LD_{50}) of the venom is estimated to be 8.6 stings per pound of body weight. Children are at a greater risk than adults. In fact, an otherwise healthy adult would have to be stung over 1,000 times to be in risk of death. Most deaths caused by multiple stings have occurred in men in their 70s or 80s who were known to have poor cardiopulmonary functioning.

- A second, potentially life-threatening result of multiple stings occurs days after the incident. Proteins in the venom act as enzymes: one dissolves the cement that holds body cells together, while another perforates the walls of cells. This damage liberates tiny tissue debris that would normally be eliminated through the kidneys. If too much debris accumulates too quickly, the kidneys become clogged and the patient is in danger of dying from kidney failure. It is important for persons who have received many stings at one time to discuss this secondary effect with their doctors. (Wasp stings are as potent in this respect as bee stings.) Patients should be monitored for a week or two following an incident involving multiple stings to be certain that no secondary health problems arise.

TREATMENT RECOMMENDATIONS

When stung by a bee, look immediately for the barbed stinger and carefully remove it by flicking it or scratching it out of the skin with the fingernail or a pointed object. Don't squeeze it, as more venom will enter the skin from the stinger sack. Stings to the head and neck are more dangerous. Immediately apply ice or cold compresses to the sting site.

- When a honeybee causes the sting, the stinger usually remains in the skin when the insect leaves because the stinger is barbed. Remove the stinger as quickly as possible because venom continues to enter the skin from the stinger for 45 to 60 seconds following a sting. It doesn't matter how you get it out as long as it is removed as soon as possible. If removed within 15 seconds of the sting, the severity of the sting is reduced.
- Wasps, yellow jackets and hornets have a lance-like stinger without barbs and can sting repeatedly. They should be brushed off the victim's skin promptly with deliberate movements. Quietly and immediately leave the area.

For stings causing itch, irritation, redness and swelling at the sting site, the following may be useful:

- Immediately apply ice or cold compresses to the sting site.
- Treat swelling by elevating the swollen body part above the heart.
- After the stinger is removed, wash the wound and treat it. Several over-the-counter products or simply a cold compress can be used to alleviate the pain of a sting. Aerosol or cream antihistamine preparations that contain a skin coolant can also help.
- Ammonia Solution--Apply a 1 to 2.5 percent solution no more than three to four times daily.
- Oral Antihistamines--Tablets may be chewed for faster relief, but liquids are more readily absorbed after oral ingestion (Chlortrimeton, Dimetane, Teldrin).
- Epinephrine Inhaler (Bronkaid mist, Primatene, Medihaler-Epi).
- Topical Steroids (Cortaid, Dermolate, Lanacort, etc.).
- Local Anesthetics (Benzocaine, Americaine, Dermoplast, Bactine, Foille, Lanacaine, Solarcaine).

If the sting is followed by severe symptoms, or if it occurs on the neck or mouth, seek medical attention immediately because swelling in these areas of the body can cause suffocation. Call 911 to summon medics if the victim is having an allergic reaction and use a bee sting kit as prescribed.
Highly sensitive persons should have emergency kits prescribed for them by their physician within easy access at all times. Anaphylaxis, if treated in time, usually can be reversed by epinephrine (adrenaline) injected into the body. Individuals who are aware that they are allergic to stings should follow their physician's advice on carry epinephrine when they may encounter stinging insects. If signs and symptoms of Anaphylaxis occur, call x-2222 (344-2222) immediately for medical assistance.

IV: Additional Information on Insect that Sting

Honeybees, the most common stinging insects, are not aggressive unless provoked. Their hairy bodies are bright yellow with black markings. They typically are found around flowers or clover. Once they sting, they die. They often leave their stinger behind.	
Bumble Bees *(Hymenoptera)* are large (3/4 to 1 1/2 inches), black and yellow hairy bees that collect and carry pollen on their hind legs to bring it back to the hive. They are most often encountered foraging at flowers and nesting places around houses, storage sheds and small barns. They normally are docile and not aggressive while foraging on flowers, however they can turn vicious when their nests are disturbed, chasing intruders for many yards away from the nest.	
Yellow Jackets are 1/2 to 3/4 inches long wasps that build nests consisting of several combs surrounded by a paper ball in wall voids, attics, underground or hollow logs. Yellowjackets defend their colonies at their nest entrances, and the colony can easily be disturbed by rapid movement and vibrations near the nest. For this reason, a human will almost certainly be stung if a lawn mower or trimmer is used near a nest. Wasps do not lose their stinger after an attack so they can sting repeatedly.	
Hornets have short black bodies with yellow or white markings. They nest in trees or bushes and sting repeatedly. Wasps are not known to carry human diseases, but allergic reactions to their sting can be fatal. Wasp and hornet venom contains a pheromone that alarms all other wasps in the area and invites them to join the attack on the victim.	
Wasps (paper wasp) are very similar to yellow jackets. Wasps are hairless with narrow "waists" that separate their chests from their long, slim, lower bodies. They can be black, brown, or red. Wasps build nests in the caves of buildings and under rafters. They sting repeatedly. Paper wasps aggressively protect their nests. They can detect movement up to 20 feet away, but usually do not attack unless the threat is within inches. The nests of paper wasps form in an upside-down umbrella fashion, and the open cells can be seen from below. Nests are constructed in protected areas, under eaves of structures, in hollowed out holes, or when voids can be accessed through a small entrance. Nests have been reported from exterior lighting fixtures, animal skulls, parking meters, bird boxes, gas grills, automobiles, and many other sites.	

Bird Dropping Diseases
(Histoplasmosis & Coccidioidomycosis)

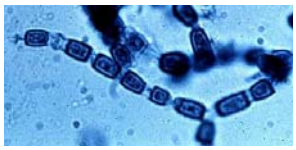
I. HAZARD OVERVIEW

Bird and bat droppings can be contaminated with fungal spore that can cause the following diseases in humans:

- **Histoplasmosis**
- **Coccidioidomycosis**

Histoplasmosis is an infectious disease of the lungs caused by a fungus called *Histoplasma capsulatum*. The infection sometimes can spread to other parts of the body. The fungus thrives in moderate temperatures and moist environments. Droppings from chickens, pigeons, starlings, blackbirds, and bats support its growth. Birds are not infected with it because of their high body temperatures, but they do carry it on their feathers. Bats can be infected because they have a lower body temperature than birds and can excrete the organism in their droppings. To multiply, *Histoplasma capsulatum* produces small spores. When inhaled, they are small enough that they enter the lungs and start an infection. Many of these infections are easily overlooked because they either produce mild symptoms or none at all. However, histoplasmosis can be severe and produce an illness similar to tuberculosis. The fungus can cause serious retinal (eye) condition called Ocular Histoplasmosis Syndrome that can lead to serious vision loss and rarely blindness.

Coccidioidomycosis, a systemic fungal disease caused by *Coccidioides immitis,* is endemic in the southwestern United States and in parts of Mexico and Central and South America. An estimated 100,000 infections occur in the United States annually, but only sporadic cases have been reported in New York where the disease is not endemic. Infections among New York State residents are low (about 30 per year.) It is one of the most virulent and infectious fungal pathogens.



II. PREVENTION AND PROTECTION RECOMMENDATIONS

Preventing Histoplasmosis & Coccidioidomycosis

- Avoid exposure to dust in a contaminated environment
- Contact the Facility and Operations Directorate for clean up of heavy infested indoor areas.
- Do not attempt to clean up buildings where bird infestations have occurred or other contaminated soil without work planning that addresses the hazards controls and protective equipment.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS

For more information, contact: OMC at x-3670

Histoplasmosis

When a person breathes in the conidia (spores) of *Histoplasma capsulatum*, the lungs' defense mechanisms attempt to neutralize them. Not all the conidia are neutralized. The ones that avoid the defense start an infection. The symptoms of the infection appear within 5 to 18 days after exposure, most commonly in 10 days.

There are five different forms of infection, as follows:

- **Asymptomatic** is recognized only by performing medical laboratory tests as the victim does not show any symptoms and is unaware of the infection.
- **Acute disseminated** does not last long (i.e., acute) but it involves other organs outside the lungs (i.e., disseminated). It is usually confined to infants and young children and is marked by fever, cough, exhaustion and enlargement of the liver and spleen.
- **Acute benign respiratory** is produced by a heavy exposure to conidia. It is marked by weakness, fever, chest pains, and cough. The severity of the symptoms depends upon the magnitude of the exposure.
- **Chronic disseminated** is of long duration (chronic) and it involves other organs outside of the lungs. It occurs in people with a reduced capacity to fight disease, for example, in patients with leukemia (cancer of the system producing blood cells) and in persons being treated with drugs that suppress the body's defense mechanisms against diseases. The chronic disseminated form is marked by fever, anemia, hepatitis, pneumonia, inflammation of the lining of the heart cavity, meningitis, and ulcers of the mouth, tongue, nose, and larynx.
- **Chronic pulmonary** occurs in persons with pre-existing lung diseases such as emphysema. It resembles tuberculosis and is more common in males over 40 years of age.

TREATMENT

Some patients require supportive treatment that relieves the symptoms of the disease.
Severe symptoms are treated with specific antifungal drugs.

Coccidioidomycosis

About 60% of infections cause no symptoms. In the remaining 40% of cases, symptoms range from mild to severe. People with a compromised immune system tend to have more serious infections.
The disease can have an acute, chronic, or disseminated form.

- Acute pulmonary Coccidioidomycosis is almost always mild, with few or no symptoms, and resolves without treatment. The incubation period is 7 to 21 days. Acute Coccidioidomycosis is rare. In any given year, about 3% of people who live in an area where coccidiomycosis is commonly seen will develop the disease.
- Chronic pulmonary Coccidioidomycosis can develop 20 or more years after initial infection, which may not have been recognized, diagnosed, or treated at the time. Infections occur between the lungs and ribs. This disorder is even less common than the acute form, however.
- In disseminated disease, spread of infection to the bones, lungs, liver, meninges, brain, skin, heart, and pericardium (sac around the heart) may take place.

TREATMENT
Severe symptoms are treated with specific antifungal drugs.

Chigger “Bites”

I. HAZARD OVERVIEW

Chiggers are the juvenile (or larval) form of a specific family of mites, the Trombiculidae. Mites are closely related to ticks.

Chigger "bite" first show up as annoying red bumps. An itch begins. It grows. More hard red welts surface. Savage scratching begins. Every welt becomes a persistent, exquisitely itching preoccupation that continues to irritate for days and even weeks.

Chiggers are less than 1/150th of an inch in diameter and are difficult to see with the unaided eye. However, when several chiggers cluster together, they can be seen because of their bright red color. Chiggers are born red; they do not become red from feeding on blood, as some believe. An engorged, well-fed chigger changes to a yellow color.

One of the greatest misconceptions about chiggers is that they burrow into the skin and eventually die, thus causing the persistent itch. Chiggers are not equipped to burrow and are too large to enter through the pores. Chiggers do bite us, much like ticks do. Chiggers attach by inserting minute specialized mouthparts into skin depressions, usually at skin pores or hair follicles. The chigger's piercing mouthparts are short and delicate, and can penetrate only thin skin or where the skin wrinkles and folds. The reason the bite itches so intensely and for such a long time is because the chigger injects saliva into its victim after attaching to the skin. This saliva contains a powerful digestive enzyme that literally dissolves the skin cells it contacts.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

Avoid the chigger habitat: Unlike ticks, which quietly wait for hosts, chiggers run about almost constantly. The distribution of chiggers in any area is extremely spotty. Chiggers tend to congregate in patches, while nearby spots of apparently the same suitable living space is free of them. Often, people will be heavily attacked while sitting in a chigger concentration area, while the lucky folks sitting only a few yards away will get no bites at all.

Chiggers are affected by temperature. They are most active in afternoons, and when the ground temperature is between 77 and 86 degrees. Chiggers become completely inactive when substrate temperatures fall below 60 degrees; temperature below 42 degrees will kill the chigger species that bite us.

If you can, plan your outdoor activities in low temperature seasons to keep chigger bites to a minimum. Researchers have also found that chiggers actively avoid objects hotter than 99 degrees. Rocks that

have been baking in the sun are almost always free of chiggers, and make a safe place to sit when you are in a chigger-infested area.

An effective means to eliminate these chiggers is to remove the habitat favored by the adults and juveniles. Clearing away brush and weeds, keeping the grass cut close to the ground and removing conditions, which attract small animals that cans serve as hosts, is the best way to get chiggers out of your yard. Chiggers seldom survive in areas that are well groomed.

Dress to prevent penetration: The first line of defense against chiggers is the right kind of clothing.

- Shorts, sleeveless shirts and sandals are poor choices in chigger-infested areas.
- Wear tightly woven socks and clothes, long pants, long-sleeved shirts, and high shoes or boots. Tucking pant legs inside boots and buttoning cuffs and collars as tightly as possible also helps keep the wandering chiggers on the outside of your clothes. Chiggers are small enough to penetrate the meshes of your clothing, but they usually stay on the surface of your clothes until they come to an easy opening such as your cuffs, collar or waistband.
- Once they are on your body, chiggers wander about for an hour or more looking for a tender spot to dine. If these traveling chiggers reach an obstacle such as a belt or an elastic band, rather than cross over the obstacle or go under it, they stop and begin to feed. They are capable of getting all over a person's body in just a few minutes. The trek from a victim's shoe to the belt line takes about 15 minutes.
- Change clothes as soon as possible, and wash them before you wear them again.
- Mosquito repellents will repel chiggers. All brands are equally effective. Applying these products to exposed skin and around the edge of openings in your clothes, such as cuffs, waistbands, shirtfronts and boot tops, will force chiggers to cross the treated line to get inside your clothes.
- Take a warm soapy bath with plenty of scrubbing as soon as possible after exposure. If you bathe at once, while the chiggers are still running over your body, you can wash them off before they bite. A bath will also remove any attached and feeding chiggers before you start to feel the itch.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS

For more information, contact: OMC at x-3670

The cause of Itching: A chigger usually goes unnoticed for one to three hours after it starts feeding. During this period the chigger quietly injects its digestive saliva. After a few hours your skin reacts by hardening the cells on all sides of the saliva path, eventually forming a hard tube-like structure called a stylostome. The stylostome walls off the corrosive saliva, but it also functions like a feeding tube for the hungry chigger. The chigger sits with its mouthparts attached to the stylostome, and sucks up your liquefied tissue. Left undisturbed, the chigger continues alternately injecting saliva into the bite and sucking up liquid tissue.

It is the stylostome that irritates and inflames the surrounding tissue and causes the characteristic red welt and intense itch. The longer the chigger feeds, the deeper the stylostome grows, and the larger the welt will eventually become. The time required for a chigger to complete its meal varies with the location of the bite, the host, and the species. If undisturbed, chiggers commonly take three or four days, and sometimes longer. On human hosts, however, chiggers seldom get the chance to finish a meal, and they are accidentally brushed away or scratched off by the victim long before the meal is complete.

Duration of Symptoms: Itching usually peaks a day or two after the bite occurs. This happens because the stylostome remains imbedded in your skin tissue long after the chigger is gone. Your skin continues the itch, allergic reaction to stylostome for many days. The stylostome is eventually absorbed by your body, a slow process that takes a week to 10 days, or longer.

Treatment

- Prevention: Warm soapy water is all that is necessary to remove and kill chiggers. Attached chiggers are removed by even the lightest rubbing. If you are away from civilization, you can remove attached chiggers before they do much damage by frequently rubbing down with a towel or a cloth.
- Lotions will relive the itching somewhat, but no substance is completely effective. The only ultimate cure is time, since there is nothing you can do to dislodge the chigger's feeding tube, the true cause of your itch. You must simply wait until your body breaks down and absorbs the foreign object.
- Local anesthetics such as benzocaine, camphor-phenol and ammonium hydroxide may provide you with several hours of comfort at a stretch. Over-the-counter creams can also help. In rare cases, some people are allergic to chigger bites and require prescription medications from their doctor.
- Chronic scratching will only cause the stylostome to further irritate. Scratching deep enough to remove the stylostome will probably cause a secondary infection that is worse than the original chigger bite. If you do scratch, disinfect the chigger bite with topical antiseptics.

Reference: http://www.conservation.state.mo.us/nathis/arthopo/chiggers/

Hanta virus

I. HAZARD OVERVIEW

Hanta virus pulmonary syndrome (HPS) is a severe cardiopulmonary illness first identified in 1993. Infected rodents (particularly the white footed mouse) transmit HPS through urine, droppings, or saliva. Humans can be infected by inhaling airborne particles of the virus or by direct contact with rodents, their droppings, or nests. The infected rodents excrete the virus in their urine, droppings, and saliva. These droppings contaminate dirt and dust that becomes airborne.

Potential exposures results from rodents or rodent-infested environments, including straw and hay piles stored in fields, abandoned farm buildings, open-access feed storage sites, and buildings with excess accumulations of dirt, debris, and spilled feed. Contact with potentially infected rodents or their excreta, including handling of dead rodents and cleaning of food storage areas, animal-handling facilities, and outbuildings, with evidence of rodent harborage present, may pose exposure to the virus causing the illness.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

Rodent control is the primary strategy for preventing Hanta virus infection.

Indoor Housekeeping:

- Keep kitchens clean (wash dishes, clean counters and floor, keep food covered in rodent-proof containers).
- Keep a tight-fitting lid on garbage.
- Do not store open or perishable foods in offices.
- Seal all entry holes 1/4 inch wide or wider with lath screen or lath metal, cement, wire screening or other patching materials, inside and out.
- Contact Facility and Operations Directorate for clean-up of wild rodent droppings .

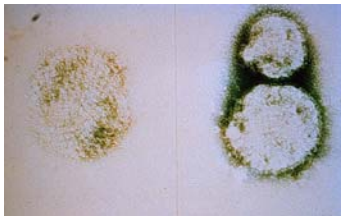
Outdoor Maintenance:

- Clear brush, grass, and junk from around building foundations to eliminate a source of nesting materials.
- Use metal flashing around the base of wooden buildings to provide a strong metal barrier. Install so that the flashing reaches 12 inches above the ground and six inches down into the ground
- Elevate hay, woodpiles and garbage cans to eliminate possible nesting sites. If possible, locate them 100 feet or more from buildings.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS:

For more information, contact: OMC at x-3670

The early symptoms include fever, headache, and muscle pain; severe abdominal, joint and lower back pain; nausea and vomiting. A cough and shortness of breath usually develops 1 to 5 days after the onset of symptoms. The primary symptom of HPS is difficulty in breathing due to fluid build-up in the lungs. This can quickly progress to respiratory failure. Early symptoms include headache, chills, dizziness, non-productive cough, nausea, vomiting, and other gastrointestinal symptoms. Malaise, diarrhea, and lightheadedness are reported by approximately half of all patients; with less frequent reports of joint pain, back pain, and abdominal pain. Patients may report shortness of breath, (respiratory rate usually 26 - 30 times per minute).



Symptoms typically follow the following pattern: Soon after exposure (the period varies widely, but ranges from 1 to 6 weeks, with an average of 2-3 weeks) the first symptoms begin. Misdiagnosis at this stage as flu is common. Later the patient needs hospitalization because of persistent fever (101F-104 F), fast heart rate, and low blood pressure.

Survival and recovery of otherwise healthy individuals is likely with hospitalization and supportive therapy. However, HPS is extremely serious and can be fatal, especially if not treated.

Insect-borne Diseases

I. HAZARD OVERVIEW

Insects can carry diseases and transmit them to human via "bites." The diseases that have occurred sporadically on Long Island in recent years are

- West Nile Virus
- Eastern Equine Encephalitis
- Malaria

West Nile Virus

West Nile Virus (WNV) infection is an illness transmitted to humans by mosquitoes. The pathogen that causes WNV infection is a virus that is known to infect birds and other animals as well as humans. Employees working outside are at risk, particularly in warmer weather (when mosquitoes are more likely to be present). The potential for infection varies on a year-to-year basis. Most cases occur in the eastern United States. Relatively few mosquitoes carry the disease. Only in recent years have cases occurred in the United States, with 700 to several thousand cases per year with 10- 250 related deaths. Up-to-date information on the number of cases and fatalities due to West Nile Virus infection can be obtained on the CDC's West Nile Virus web page at: http://www.cdc.gov/ncidod/dvbid/westnile/surv&control.htm.

Eastern Equine Encephalitis

Eastern Equine Encephalitis (EEE) is a mosquito-borne viral disease (virus is a member of the family *Togaviridae*, genus *Alphavirus*) that occurs in the eastern half of the United States. Because of the high-case fatality rate, it is regarded as one of the more serious mosquito-borne diseases in the United States. Horses can also become infected with, and die from, EEE virus infection. Several species of mosquitoes can become infected with EEE virus. The most important mosquito in maintaining the transmission cycle is *Culiseta melanura*. The United States averages 4 cases/year, with a range from 0-14 cases. Human cases occur relatively infrequently, largely because the primary transmission cycle takes place in swamp areas where populations tend to be limited. Persons over age 50 and younger than age 15 seem to be at greatest risk for developing severe disease

Malaria

Malaria is a mosquito-borne disease caused by blood parasites, called Plasmodia. The disease is transmitted to people by the Anopheles mosquito. This disease is a leading cause of debilitating illness, with over 200 million cases each year from around the world. Almost all of the cases reported in New York State each year are acquired in foreign countries. However, a few locally acquired cases have occurred on Long Island and in Queens.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

Eliminate mosquito breeding grounds: A highly effective way of reducing mosquito populations and reducing the number of mosquito bites. Mosquitoes lay eggs in standing water. Mosquitoes can breed in any source of stagnant or standing water that lasts more than 4 days.

- Inspect work areas and, where possible, get rid of sources of stagnant or standing water to remove a potential breeding ground of mosquitoes.
- Avoid leaving containers that can accumulate water in an uncovered or upright position, such as wheelbarrows, drums, buckets, cans, tarps and other containers.
- Drain or pump out collected water from newly constructed swimming pools, rain gutters, and ditches.
- Properly store any open containers in the work area that are not being used such as buckets and cans.
- Create holes to drain water from containers that cannot be thrown out.
- Fill in any potholes, patches, and other areas where water is likely to accumulate.

Employee Precautionary Actions

- Encourage workers to take extra precautions whenever mosquitoes are present and biting (for example, mosquito swarms are often present at dusk or at dawn).
- Cover as much of the skin as possible by wearing shirts with long sleeves, long pants, and socks whenever possible.
- Use a head net to protect skin and neck.
- Avoid use of perfumes and colognes when working outdoors during peak times when mosquitoes may be active; mosquitoes may be more attracted to individuals wearing perfumes and colognes.
- Use insect repellents containing DEET (N, N-diethyl-m-toluamide or N, N-diethyl-3-methylbenzamide) or Picaridin. **Note:** To avoid reaction to DEET or other ingredients of insect repellents, it is important that employees read and follow the directions on all insect repellent before use. Repellents should not be applied to skin that is already irritated, or to cuts/lacerations.
- Spray insect repellent on the outside of your clothing, as it is possible for mosquitoes to bite through thin clothing.
  - Do NOT spray insect repellent on skin that is under clothing.
  - Do NOT spray aerosol or pump products in enclosed areas.
  - Do NOT spray a pump or aerosol product directly on your face. First spray on hands and carefully rub on face (do not allow insect repellent to contact your eyes and mouth).
  - After returning indoors, use soap and water to wash skin that has been treated with insect repellent.
- Employees should protect themselves from skin contact with dead birds. The CDC recommends using gloves or an inverted plastic bag when handling dead birds to protect against possible West Nile Virus exposure.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS

For more information, contact: OMC at x-3670

West Nile Virus

Less than 1% of people bitten develop any symptoms. People older than 50 are most likely to develop symptoms.

In most cases, persons infected with West Nile Virus either show no symptoms or have very mild flu-like symptoms, called West Nile fever. These mild cases of West Nile fever normally last only a few days and are not believed to cause any long-term effects. According to the CDC, severe cases have resulted in "West Nile encephalitis," an inflammation of the brain, "West Nile meningitis," inflammation of the membrane around the brain, or "West Nile meningoencephalitis" an inflammation of the brain and the membrane around it. The signs and symptoms of severe disease may last several weeks and may have permanent neurological effects. The typical time from infection to the onset of signs and symptoms is 3 to 14 days.

Signs and symptoms of the milder illness, West Nile fever, include the following:

- Headache
- Fever
- Body aches
- Sometimes, swollen lymph nodes
- Sometimes, a skin rash on the body

Signs and symptoms of severe infection (West Nile encephalitis or meningitis), include the following:

- Headache
- High fever
- Stiffness in the neck
- Disorientation (in very severe cases, coma)
- Tremors and convulsions
- Muscle weakness (in very severe cases, paralysis)

Eastern Equine Encephalitis (EEE)

Symptoms range from mild flu-like illness to encephalitis (inflammation of the brain), coma, and death.

- The EEE case fatality rate (the % of persons who develop the disease who will die) is 35%, making it one of the most pathogenic mosquito-borne diseases in the United States
- It is estimated that 35% of people who survive EEE will have mild to severe neurologic deficits.

Malaria

Symptoms include fever, chills, sweats and headache, and in some instances may progress to jaundice, blood coagulation defects, shock, kidney or liver failure, central nervous system disorders and coma. Cycles of chills, fever and sweating occurring every one, two or three days is a good indicator of malaria in a person recently returning from a tropical area.

How soon do symptoms occur?

The time between the infective mosquito bite and the development of malaria symptoms can range from 12 to 30 days depending on the type of Plasmodia involved. One strain of Plasmodium, called *P. vivax*, may have a prolonged incubation period of 8 to 10 months. When infection occurs by blood transfusion, the incubation period depends on the number of parasites transferred but is usually less than two months.

When and for how long is a person able to spread malaria?

Untreated or inadequately treated cases may be a source of mosquito infection for one to three years depending on the strain of Plasmodium. Direct person-to-person transmission does not occur. Stored blood products can remain infective for 16 days.

What is the treatment for malaria?

Due to the changing pattern of drug-resistant strains, current recommendations can be obtained from your local, county, or state health department.

Lightning

I. HAZARD OVERVIEW

In the United States, an estimated 25 million cloud-to-ground lightning flashes occur each year. On average, 70 people per year are killed in the United States. During a thunderstorm, each flash of cloud-to-ground lightning is a potential killer if a person is in the path of the lightning discharge.

Lightning tends to travel the path of least resistance and often seeks out tall or metal objects. A 'tall' object can be an office tower, a home, or a child standing on a soccer field. Be warned, lightning can and does strike just about any object in its path.

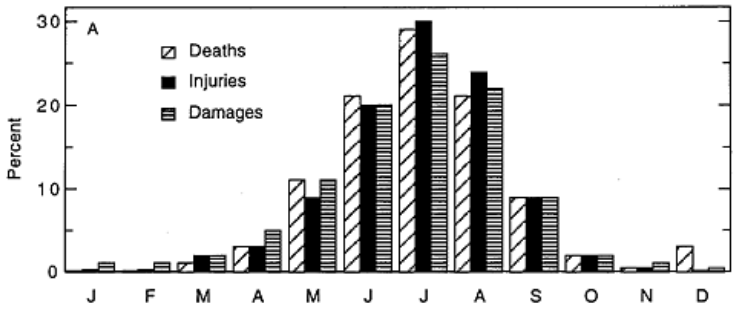
In addition to the visible flash that travels through the air, the current associated with the lightning discharge travels along the ground. Although some victims are struck directly by the main lightning stroke, many victims are struck as the current moves in and along the ground.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

Prepare

Advance planning is an important means to safety. Lightning safety is "anticipating a high-risk situation and moving to a low-risk location." Lightning Safety Plans should be site-specific.

1. Designate a responsible person to monitor weather conditions.
   - A portable weather radio will provide regular weather condition updates.
   - Watch for weather signs -- clouds and thunder. Lightning can strike as far as 10 miles away from the rain area in a thunderstorm. That's about the distance you can hear thunder. When a storm is 10 miles away, seek shelter.
   - Wait at least 30 minutes after the last clap of thunder before leaving shelter. Don't be fooled by sunshine or blue sky!.
   - Two-thirds of the casualties occur between noon and 6 p.m.
   - Lightning casualties and damages peak during the summer months. July has the most deaths, injuries, casualties and damage reports.
   -
   - Use the LigthningStorm.com web



site to view a map of lightning activity.
http://www.lightningstorm.com/tux/jsp/gpg/lex1/mapdisplay_free.jsp;jsessionid=7030142388107825209 6616.
- Consider a Lightning detection unit maintained at the work location.

2. Identify **Safe** and **Unsafe** locations beforehand.

3. When hazardous conditions occur:
   - Suspend Activities
   - Evacuate People
   - Monitor Conditions.

SEEK SAFE SHELTER IF OUTDOORS

- Avoid water, areas that are higher than the surrounding landscape, standing near tall objects, and open spaces. If there is a tall object nearby, move as far away as possible - at least 2 meters (7 ft). Standing next to tall isolated objects like poles or towers makes you vulnerable to secondary discharges coming off those objects.
- Avoid all metal objects including electric wires, fences, machinery, motors, power tools.
- Stop using the (hard-wired) telephone and headsets.
- If you're caught outside and unprotected:
  - Get in a hard-topped car. (Do not touch metallic objects -- door and window handles, radio dials, CB microphones, gearshifts, steering wheels, and other inside-to-outside metal objects.
  - Heavy Equipment: Backhoes, bulldozers, loaders, graders, scrapers, mowers, etc., which employ an enclosed rollover systems canopy (ROPS), are safe in nearby electrical storms. Shut down the equipment, close the doors, and sit with hands in lap, waiting out the storm. In no circumstances, during close-in lightning, should the operator attempt to step off the equipment to ground in an attempt to find another shelter. A "dual pathway to ground" is created. Lightning voltages will attempt to equalize themselves, and they may go through a person to do so.
  - Smaller equipment without ROPS is not safe. Small riding mowers, golf cars, utility wagons are examples. Rubber tires provide zero safety from lightning. Abandon this machinery and get into a safe shelter.
  - Never use a tree as a shelter.
  - Keep away from metal objects including bikes, golf carts, fencing, and machinery.
  - Immediately get out and away from pools, lakes, and other bodies of water.
  - Spread out -- don't stand in a crowd of people.

Safe Areas include

- Fully enclosed metal vehicles with windows up.
- Substantial and permanent buildings.
- Fully enclosed metal vehicle such as a car, truck, or a van with the windows completely shut.

Unsafe Areas include

- Small structures including huts, rain shelters, canopies, small picnic shelters.
- Nearby metallic objects like fences, gates, instrumentation and electrical equipment, wires, and power poles.
- Near trees.

Safety Crouch

If hopelessly isolated from shelter during close-in lightning, adopt a low crouching position with feet together:

- Crouch down. Put feet together. Place hands over ears to minimize hearing damage from thunder.
- Avoid proximity (minimum of 15 ft.) to other people.
- Do not lie down or place your hands on the ground.

IF INDOORS

- **Avoid water.**
- **Stay away from doors and windows. Do not use the telephone.**

- **Take off headsets***.* Turn off, unplug, and stay away from appliances, computers, power tools, and TV sets. Lightning may strike exterior electric and phone lines, inducing shocks to inside equipment.
- Avoid contact with piping including sinks, baths, and faucets.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS

For more information, contact: OMC at x-3670

Helping a Lightning Strike Victim

People who have been struck by lightning do not carry an electrical charge and are safe to handle. Apply first aid immediately, if you are qualified to do so. Get emergency help promptly.

Only 20 percent of lightning victims are immediately struck dead. If a person is struck by lightning, medical care may be needed immediately to save the person's life. Cardiac arrest and irregularities, burns, and nerve damage are common in cases where people are struck by lightning.

Lightning strikes have a short duration, only lasting up to a few milliseconds. Most of the current from a lightning strike passes over the surface of the body in a process called "external flashover."

Lightning strikes result in deep burns at point of contact (mostly on the head, neck, and shoulders). Lightning victims' burns seem to center at the entry and exit points. Victims may be injured from falling down or being thrown. Seek medical attention after a lighting incident.

Most Typical Disorders Associated with Lightning Strikes

- Lightning deaths (~20%)
- Cardiopulmonary injuries
- Neurologic/psychiatric injuries
- Burns and skin marking
- Blunt traumas (explosion)
- Auditory and ocular injuries

Caution: Beware of electrical shock hazard from outdoor electrical distribution lines.

Poisonous Plants

I. HAZARD OVERVIEW

Poison Ivy, Poison Oak, and Poison Sumac can cause skin irritation and allergic reactions in many people (Rash in three out of four):

The reaction in the skin is caused by contact with an oily irritant urushiol (oo-ròo-she-all) found in the plant's stem, roots, branches, leaves, and fruit. The oil can be found in

- Leafy plants, dormant plants, long-dead prunings,
- Contaminated clothes & tools,
- Contaminated pets, or
- Smoke from burning plants.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

- **Apply a Barrier Cream** (like ARMOR) on exposed skin: A coating of cream provides resistance between skin proteins and the irritating oil.
- **Wear long pants and long sleeve shirt and shoes and socks. Wear cotton or leather gloves.**
- **Decontaminate clothing:** Launder in washing machine with detergent.
- **Clean contacted surfaces: tools**, **clothing**, gloves, etc.
  - Oils do NOT evaporate
  - Active for a **year or longer** after being picked up.
- **Wash infected skin** as soon as possible.
  - Apply a skin cleanser (like TECHNU or Fels Naptha Soap). It will minimize the severity and prevent the spread of the sap to uninfected body parts,
  - Oils continue to spread for the first 1 or 2 days.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS:

For more information, contact: OMC at x-3670

- Rash occurs 2-3 hr up to 3-5 days later. The rash will typically last:
  - In mild cases 5-12 days.
  - In more severe cases up to 30 days or longer.
- Itchiness and swelling, then reddish inflammation, tiny pimples.
- Blisters form and couple in a chain-like reaction. Breaking the blister does not cause spreading. Blisters contain the body's natural allergic reaction to poisonous plants, not the oil.
- No person is completely immune. Some people are sensitive to small amounts of oil. Others react only to large amounts. Severe cases of poisoning have occurred after supposedly “immune” individuals have purposely rubbed Rhus leaves onto their skin. Even if you have never gotten the rash before, you can *begin* getting the rash at any time during your life. Sensitivity is a matter of being exposed enough times until the body becomes allergic.
- There is no vaccine against the rash.
- You cannot get the rash from someone else. Once the rash appears, the oil has all bonded to the victim's skin, so it can't be spread to others.
- You can get the rash from pets. Fur protects the animals’ skin from the oil. The oils remain on their fur and can contaminate you. Remove the oil by washing the pet.
- Most remedies act as astringents that dry out the skin. There is no cure once the rash begins, only relief of the symptoms.
  - Treatments relieve minor itching, pain, oozing, and swelling with over-the-counter anti-itch treatments that contain zinc acetate, diphenhydramine HCl, menthol zinc oxide, or hydrocortisone.
  - In severe cases a physician can prescribe antihistamine creams or tablets. For severe cases, a shot of cortisone is given.
- Do not break the blisters. Open blisters can easily become infected and lead to blood poisoning. If the blisters break, cover loosely with a sterile bandage.
- Do not wrap or cover the rash with bandages. Air is helpful to healing. If you cover the rash with a sterile bandage, cover loosely to allow healing oxygen to reach the surface of the skin. Keep the rash very clean.
- Inhalation of smoke from burning brush containing Poisonous plant can result in serious respiratory distress. Seek medical attention.

IV. ADDITIONAL INFORMATION ON THE PLANTS

POISON IVY
(Rhus radicans)

Woody perennial that grows as a small shrub (5-120 cm high), trailing vine, or an aerial-rooted vine that climbs rough surfaces to 15 m. Compound leaf consisting of three bright green, shiny leaflets are alternately arranged on the stem. Leaflets are elliptic to egg-shaped and have either smooth, toothed or lobed margins. Upper leaf surface is smooth, while hairs are found on veins of underside of leaf. The leaves vary in size from 8 to 55 mm long. They are reddish in the spring, green during the summer, and various shades of yellow, orange, red, or bronze in the autumn.

Small flowers have 5 petals about 3/16" in diameter. Male and female flowers, normally found on separate plants, are clustered, small, and cream to yellow green in color. Fruit is waxy green, white, cream, or yellow colored. Fruits grow in clusters and are 3-7 mm in diameter and 1-seeded. Plant reproduces by creeping roots and seed.

Occurs on sandy, stony, or rocky shores of streams, rivers, and lakes; it sprouts in thickets, along the borders of woods, and in wood openings. BNL 4/98 9

POISON OAK
(Rhus taxicodendron)

Woody perennial that grows as a small shrub about 8 feet high. Sometimes becomes a vine several inches in diameter that grows high into the oak trees attached by air-roots. Compound leaf consists of three more bluntly ended leaflets which usually have 3-7 deep teeth or lobes along the margins. They are shiny, without prickers, and the middle leaf has a distinct stalk.

Plant has erect stems, small greenish flowers, and smooth seeds that are about 1/4 inch across. It is deciduous.

All parts of the plant contain the oil Urushiol which causes the skin reaction. Deer eat the leaves and woodrats make nests with the branches. It is one of the most important food plants for wildlife.

BNL 4/98 11

POISON SUMAC
(Rhus vernix)

Woody perennial that grows to a height of 15-20 feet as a tall shrub or small tree with 6-12 leaflets arranged in pairs, and an additional single leaflet at the end of the midrib.

The small yellowish green flowers, borne in clusters, mature into whitish green fruits that hang in loose clusters 10-30 cm in length. The male and female flowers of poison sumac are on separate plants, as in poison ivy and western poison oak.
Although nonpoisonous sumac species have leaves similar to those of poison sumac, the nonpoisonous species have red fruits that form distinctive, erect, cone-shaped terminal heads, not the hanging whitish green fruits of poison sumac.

Usually found in shady swamps.

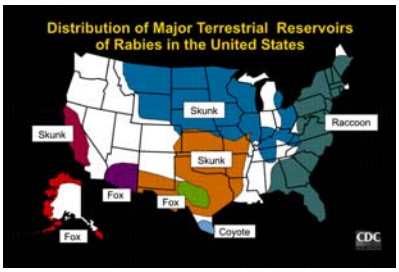
BNL 4/98 10

Rabies

I. HAZARD OVERVIEW

Rabies is a viral disease of mammals transmitted through the bite or scratch of an animal with rabies (a rabid animal) like a raccoon, skunk, feral cat, or bat. Rabies is an infectious viral disease that affects the nervous system of humans and other mammals. It is also possible, but quite rare, that people may get rabies if infectious material from a rabid animal, such as saliva, gets directly into their eyes, nose, mouth, or a wound.

Thousands of people are successfully treated each year after being bitten by an animal that may have rabies. A few people die of rabies each year in the United States, usually because they do not recognize the risk of rabies from the bite of a wild animal and do not seek medical advice.



In 2001, 7437 cases of rabies were reported in the United States in animals and no cases in humans. In this century, the number of human deaths in the United States attributed to rabies has declined from 100 or more each year to an average of 1 or 2 each year.

The vast majority of rabies cases occur in wild animals like raccoons, skunks, bats, and foxes. Rabies virus from bats has caused most of the recent human rabies cases in the United States. Domestic animals account for less than 10% of the reported rabies cases, with cats, cattle, and dogs most often reported rabid.

Domestic animals accounted for 6.8% of all rabid animals reported in the United States in 2001.

Transmission

Transmission of rabies virus usually begins when infected saliva of a host is passed to an uninfected animal. Various routes of transmission have been documented and include contamination of mucous membranes (i.e., eyes, nose, and mouth), aerosol transmission, and corneal transplantations. The most common mode of rabies virus transmission is through the bite and virus-containing saliva of an infected host. People cannot get rabies from having contact with bat guano (feces), blood, or urine, or from touching a bat on its fur.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

- Avoid direct contact with unfamiliar animals.
- Do not handle, feed, or unintentionally attract wild animals with open garbage cans or litter.
- Teach children never to handle unfamiliar animals, wild or domestic, even if they appear friendly.
- Prevent wild animals and bats from entering living quarters or occupied spaces in buildings where they might come in contact with people and pets.
- Rabies is common in developing countries in Asia, Africa, and Latin America where dogs are the major reservoir of rabies. Tens of thousands of people die of rabies each year in these countries.

Before traveling abroad, consult with a health care provider, travel clinic, or your health department about the risk of exposure to rabies, pre-exposure prophylaxis, and how you should handle an exposure, should it arise.

- Wild animals and bats should always be prevented from entering rooms in buildings. Carefully examine the building for holes that might allow wild animals and bats entry. Any openings larger than a quarter-inch by a half-inch should be caulked. Use window screens, chimney caps, and draft-guards beneath doors to attics, fill electrical and plumbing holes with stainless steel wool or caulking, and ensure that all doors to the outside close tightly. Observe where the bats exit at dusk and exclude them by loosely hanging clear plastic sheeting or bird netting over these areas. Bats can crawl out and leave, but cannot re-enter. After the bats have been excluded, the openings can be permanently sealed.
- If a wild animal or bat enters a building, do not attempt to remove the animal. Contact Plant Engineering for removal.
- Pet owners should keep vaccinations up-to-date for all dogs, cats and ferrets. If a wild animal bites your pet, seek veterinary assistance for the pet immediately.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS

For more information, contact: OMC at x-3670
Centers for Disease Control and Prevention: www.cdc.gov/ncidod/dvrd/rabies

Signs and symptoms

Rabies virus infects the central nervous system, causing encephalopathy and ultimately death. Early symptoms of rabies in humans are nonspecific, consisting of fever, headache, and general malaise. As the disease progresses, neurological symptoms appear and may include insomnia, anxiety, confusion, slight or partial paralysis, excitation, hallucinations, agitation, hypersalivation, difficulty swallowing, and hydrophobia (fear of water). Death usually occurs within days of the onset of symptoms.

A pre-exposure vaccination is recommended for persons in high-risk groups, such as veterinarians, animal handlers, and certain laboratory workers. Other persons whose activities bring them into frequent contact with rabies virus or potentially rabid bats, raccoons, skunks, cats, dogs, or other species at risk of having rabies should also be considered for pre-exposure prophylaxis. In addition, international travelers likely to come in contact with animals in areas of enzootic dog rabies, which lack immediate access to appropriate medical care, including biologics, should be considered for pre-exposure prophylaxis.

What to do after a possible exposure

If an animal or bat bites you -- or if infectious material (such as saliva) from an animal gets into your eyes, nose, mouth, or a wound -- wash the affected area thoroughly and get medical advice immediately. Whenever possible, the animal should be sent to a laboratory for rabies testing.

People usually know when a bat has bitten them. However, because bats have small teeth, which may leave marks that are not easily seen, there are situations in which you should seek medical advice even in the absence of an obvious bite wound.
The following information will help your health care provider assess your risk:

- the geographic location of the incident
- the type of animal that was involved
- how the exposure occurred (provoked or unprovoked)
- the vaccination status of animal
- whether the animal can be safely captured and tested for rabies.

Rabies vaccine and immune globulin

There is no treatment for rabies after symptoms of the disease appear. However, two decades ago scientists developed an extremely effective new rabies vaccine regimen that provides immunity to rabies when administered after an exposure (post-exposure prophylaxis) or for protection before an exposure occurs (pre-exposure prophylaxis).

Spider Bites

I. HAZARD OVERVIEW

All spiders possess venom, which they use for paralyzing prey and for self-defense against predators. The type of venom and its effects on humans varies among species. Although most spiders are relatively harmless, the black widows (occurs on Long Island) and brown recluses (Long Island is not in the typical range) are considered dangerous to humans and animals and should be avoided.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

- Be aware of spider habitats: Black widows nest indoors and outdoors. Inside they have been found in basements, attics, inside cabinets, under beds, and in closets. Outside they like to nest under objects such as boards, tin, stones and bricks, in clumps of weeds and grasses, in water meter boxes and around rubbish. In the forest they prefer to nest in rotten stumps, underneath logs and around rocks. Many are associated with dry, undisturbed piles of firewood, old limbs, rock piles, bales of hay, wooden buildings and pit privies.
- Protect hands with gloves when working outdoors.
- Remove trash, old boxes, piles of lumber, old rubble piles and other unwanted items from under or around houses and outbuildings.
- Do not go barefoot.
- Install screens on doors and windows to prevent entry.
- Seal or caulk cracks and crevices where spiders can enter buildings.
- Wash off the outside of buildings, especially around window wells and other undisturbed places where webs are built.
- Insecticides: Pyrethrin is registered specifically for black widow spiders and Resmethrin (Vectrin) is useful for clean outs in outbuildings, crawl spaces, etc.
- Have spider egg casings collected and destroyed if found inside buildings. Do not break open the casings.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS:

For more information, contact: OMC at x-3670

Although the black widow's bite is rarely fatal, it can produce very severe reactions in humans, some of which include sweating, nausea, severe abdominal cramping, and difficulty in breathing and lowered blood pressure. Small children and older adults are usually affected more severely than other groups of people. Death is always a possibility without proper medical treatments.

The venom of the black widow spider is 15 times as toxic as the venom of rattlesnakes, however; only a minute amount of the toxin is injected with a single bite by the spider. The severity of a person's reaction to the bite depends on the area of the body bitten, amount of venom injected, depth of bite, seasonal changes and temperature. Spider bites are uncommon and serious long-term complications or death is rare. Deaths were only rarely officially attributed to black widow bites in the United States.

The bite feels like a pinprick or is not even felt. At first, there may be only slight local swelling and two faint red spots surrounded by local redness at the bite. Pain becomes intense in one to three hours and may continue up to 48 hours. Pain usually progresses from the bitten member up or down the arm or leg, finally localizing in the abdomen and back. The abdominal muscles may become rigid and board-like with severe cramps (resembles appendicitis). There may be pain in the muscles and soles of the feet, and eyelids may become swollen.

Other symptoms may be nausea, profuse perspiration, tremors, labored breathing and speech, and vomiting. During this time, a feeble pulse, cold clammy skin, unconsciousness, convulsions and even death may result if the victim does not receive medical attention immediately. Additional complications may occur due to the infection of the bite. However, with some untreated individuals, symptoms may diminish in several hours and be gone in several days after agony.

TREATMENT RECOMMENDATIONS

Persons younger than 16 and older than 60, especially those with a heart condition, may require a hospital stay. (Heart and lung failure may result in death.) With treatment (specific anti-venom), healthy people recover rapidly in two to five days.

- If bitten, remain calm, collect the spider, if possible, for positive identification and get medical attention immediately.
- Contact the OMC, hospital and/or Poison Information Center. First aid is of limited help.
- Apply a mild antiseptic such as iodine or hydrogen peroxide to prevent infection.
- Never put heat or warmth on a spider bite as it could increase the spread of the venom and reaction to the bite.
- Cleaning the bite area is of the utmost importance.
- Apply cool compresses to help decrease pain, as well decrease spread of venom.
- Antibiotics are helpful in the case of a secondary infection. Basic wound care is the essentials in all bites.

IV. Spiders Potentially Encountered on Long Island

The **Southern Black Widow Spider** *Latrodectus mactans*, is widely distributed in the United States (however Long Island is too far north). Mature females are black with a red hour-glass-shaped mark on the belly. On the female of the **Northern Black Widow** *L. variolus,* (found on Long Island), the hourglass mark under its belly is incomplete. The widow spiders are extremely poisonous. The venom is a neurotoxin and works rapidly on the human body. The males are variously colored and are often eaten by the females after mating.

Adult males are harmless, about half the female's size, with smaller bodies, longer legs and usually have yellow and red bands and spots over the back, as do the immature stages. Newly hatched spiderlings are predominately white or yellowish-white, gradually acquiring more black and varying amounts of red and white with each molt. Juveniles of both sexes resemble the male and are harmless.

The **Brown Recluse Spider** *Loxosceles reclusa* is found throughout the south of the United States **(not expected on Long Island)**. These spiders range from western Georgia northward into Kentucky and westward to Kansas and Texas. Since these spiders are easily transported, it is wise to check vacation gear when returning from a southern and western vacation.

As its name implies, it is a shy spider and likes its privacy in cluttered closets, basements, and outbuildings. It occurs outdoors under rocks and rubble but prefers to nest in or around human dwellings. The spider has a violin-shaped mark extending from the eyes to the abdomen. (Photo by: James O. Howell)

Bites from the brown recluse spider are painful and can cause a skin ulcer that is slow to heal.

Ground Spiders and Wolf Spiders: Most of these common spiders are also quite large and dark brown in color. They may be found running along the ground chasing their prey.

Wolf spiders are large and hairy spiders that live on the forest floor and in trees. Bites from wolf spiders are very painful but rarely occur unless the spider is handled or squeezed. (Photo by: James O. Howell)

Crab spiders are crablike in appearance and walk sideways or backwards. These spiders spin no webs, but forage for their prey or wait in ambush for it. One species can change color depending upon the color of the flower it is resting on.

Nursery Web and Fishing spiders may be quite large, some having a leg spread of three inches. Many of them live near water, walking over the surface and diving beneath it. They feed on aquatic insects and even small fish. These spiders are rovers and the female spins a web only for the young. The female carries the egg sac underneath her until the young spiders are ready to hatch at which time she ties it to a plant and wraps leaves around it.

The fangs are certainly able to penetrate human skin, but reports of humans being bitten are rare. A single known report indicates immediate burning pain at the site of the bite, followed by redness and minor local tissue necrosis.

Orb weavers include the common garden spiders, which are brightly colored, black and yellow or black and red. These spiders are usually found resting head downward near the center of their large orb web.

Jumping spiders: Small to medium in size with short legs and stout bodies. The body is hairy and may be brightly colored or iridescent. They are found primarily under stones and in debris.

Harvestman or Daddy Longlegs: These animals are not true spiders, but they are found in gardens and interior spaces. These arachnids have a small oval body and extremely long legs. They feed on plant juices and dead insects.

Common house spider has a cosmopolitan distribution and has probably been transported around the world by humans. It is a common and characteristic species of houses, barns, and sheds. Rarely have common house spiders been known to bite humans, and their bites apparently do not result in serious symptoms.

Spider Egg Sack

Snakebites

I. HAZARD OVERVIEW

BNL and Long Island is not home to any snakes that are dangerous to humans. The Eastern Hognose Snake, with rear fangs, is slightly venomous, but harmless to people. Rattlesnakes have been gone from Long Island since the early 1900s.

The snakes in our area will typically not display aggressive behavior and will not bite a human unless provoked by an action such as trying to pick one up. Some snakebites pose a very small risk of a Salmonella bacterial infection resulting.

The most common Long Island snakes are the garter snake and the water snake.

- Garter snakes are found in many places, including woods, marshes, and backyards.
- Water snakes are found in and near almost any water or wetland.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

- Do not pick up or play with any snake unless you have been properly trained. Most serious snakebites occur when someone deliberately provokes a snake.
- Wear long pants and boots.
- Avoid areas where snakes may be hiding -- under rocks, logs, etc.
- Tap ahead of you with a stick before entering an area with an obscured view of your feet. Snakes will attempt to avoid you if given adequate warning.
- Wash your hands if you have come in contact with or handled a snake or other reptile, to prevent salmonella poisoning.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS

If bitten: Clean snake bites with soap and water and go to the OMC for consultation.

IV. SNAKES FOUND ON LONG ISLAND

SOURCES: Hofstra University; State University of New York, College of Environmental Science and Forestry

Northern Brown Snake
Storeria dekayi
Fairly common
Dark brown to light tan
9 to 13 3/4 inches
In mild weather, active during day; when hot, active at night.

Eastern Hognose Snake
Heterodon platirhinos
Fairly uncommon
Highly variable, colors include red, orange, olive, yellow, brown or gray.
2 to 3 feet
When threatened, it spreads and flattens its head, inflates its body and hisses.

Northern Water Snake
Nerodia sipedon
Fairly common near water
Reddish-brown to grayish-brown
22 to 44 inches
Saliva prevents clotting, so bites may cause profuse bleeding.

Common Garter Snake
Thamnophis sirtalis ssp.
Common
Variable, with black stripes
18 to 51 inches
Can release an unpleasant musk odor when threatened.

Ribbon Snake
Thamnophis sauritus ssp.
Uncommon
Black or brown with yellow stripes
18 1/2 to 40 inches
Likes to bask on rocks, stonewalls, hedges and decks.

Eastern Garter Snake
Thamnophis sirtalis sirtalis
Common
Olive to brown, black, with three yellow stripes
18 to 25 1/2 inches
Will bite people.

Eastern Ribbon Snake
Thamnophis sauritus sauritus
Uncommon
Dark red to brown with yellow stripes
17 3/4 to 26 inches
Good swimmer but will not enter deep water.

Milk Snake
Lampropeltis triangulum
Fairly common
Gray or tan with reddish-brown or brown spots
23 5/8 to 35 1/2 inches
Welcome on farms, where it eats rodents.

Worm Snake
Carphophis amoenus
Uncommon
Brown to black, resembles an earthworm
7 1/2 and 11 inches
Secretive, almost never seen in the open.

Northern Black Racer
Coluber constrictor
Fairly common
Black with white chin and throat
36 to 67 inches
Largest and fastest snake on the Island.

Smooth Green Snake
Liochlorophis vernalis
Uncommon
Green on back, and white on the underbelly
11 3/4 to 19 3/4 inches
Hibernate together in large numbers.

Northern Ringneck Snake
Diadophis punctatus
Uncommon
Slate gray to black with bright yellow to red on its underside.
9 1/4 to 15 3/4 inches
Releases musk and intestinal contents when threatened.

Northern Redbelly Snake
Storeria occipitomaculata
Very rare
Gray-brown, gray or black
6 to 8 1/4 inches
Curls upper lip when frightened.

Tetanus

I. HAZARD OVERVIEW

Tetanus, also known as lockjaw, is a disease manifested by uncontrolled muscle spasms. The disease is frequently fatal, especially to the very old or very young. It occurs predominantly in developing countries among newborn infants, children, and young adults, but it is still encountered in the United States, especially in un-immunized or inadequately immunized adults over fifty years of age. It is preventable by immunization.

The tetanus bacterium spores enter the body through damaged tissue. Tetanus is not directly transmitted from person to person. Instead tetanus spores may be introduced into the body through a puncture wound contaminated with soil, street dust, animal feces, injected contaminated street drugs, lacerations, burns, and even trivial or unnoticed wounds. Puncture wounds pose the highest risk.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

The steps in prevention of this disease are

- Be aware of your environment: do not step on sharp objects such as rusty nails that may be contaminated.
- Wear sturdy footwear, such as safety shoes to lessen potential for penetration of sharp objects.
- If wounded, clean the cut with vigorous washing with clean water and the application of antiseptic.
- Prophylactic (pre-injury) immunization with the tetanus toxoid (vaccine).

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS

For more information, contact: OMC at x-3670

Tetanus disease is due to a potent poison produced by the bacteria. The poison has a stimulating effect on certain muscle groups. Most of the time the muscles of the jaw, face, and neck are affected first and then progressively more distant muscles such as the arms and legs. In this type of generalized tetanus, which is the most frequent form of the disease, the release of larger quantities of poison from a wound into the bloodstream will tend to produce both a quicker onset and a more rapid progression of symptoms, as well as more severe disease.

The tetanus bacteria spores are found everywhere. Any wound can serve as an entry point for the disease. In the United States, tetanus cases average between fifty and one hundred per year, mostly in under-immunized older adults, and the source is usually a wound. About 30 percent of the people who get tetanus die from it.

The time between an injury and the occurrence of first symptoms is typically less than two weeks but may range from two days to months: Usually the shorter the period, the more severe the disease. Initially symptoms of tetanus may include

- Localized or generalized weakness,
- Stiffness or cramping, or
- Difficulty chewing and swallowing food.
- An early sign is often the complaint of “lockjaw.”
- Increasing muscle rigidity follows in the generalized disease and progressively involves more muscle groups.

For patients who survive tetanus, recovery can be long (1-2 months) and arduous. Muscle spasms may begin to decrease after ten to fourteen days and disappear after another week or two. Residual weakness, stiffness, and other complaints may persist for a prolonged period, but complete recovery can occur from uncomplicated tetanus.

Illness with tetanus usually does not result in immunity, therefore immunization for all recovered patients is recommended. Tetanus toxoid has proved to be safe and effective since its introduction during the 1920s. It will produce immunity to tetanus for at least 10 years in 95 percent or more to the vaccinated. Booster doses are recommended every 10 years to ensure the maintenance of protective antitoxin levels. OMC can provide booster shots for BNL employees.

However, anyone who sustains a wound other than a minor cut, especially a wound that is deep or becomes contaminated with dirt, should receive a tetanus booster if more than 5 years have elapsed since the last dose. If you aren’t sure whether your wound is serious enough to require a dose of tetanus toxoid, check with your doctor.

If an injury from a sharp object occurs, go to the OMC for evaluation and treatment.

Tick-borne Diseases

I. HAZARD OVERVIEW

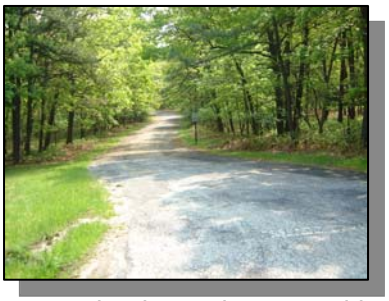
Four tick-borne diseases occur on Long Island. Not all ticks are infected with a disease and not all species of ticks carry all the diseases. The frequency of occurrence of some of these diseases is extremely rare while others are relatively common. The best preventative measure is proper dress when in tick-infested areas and prompt removal of tick before it can attach and transmit the disease agents.

The most likely diseases to occur from a tick bite on Long Island are as follows:

- **Lyme Disease**
- **Babesiosis**
- **Ehrlichiosis (HME)**
- **Anaplasmosis (HGA)**
- **Rocky Mountain Spotted Fever (RMSF)**
- **Southern Tick-Associated Rash Illness (STARI)**

II. PREVENTION AND PROTECTION RECOMMENDATIONS

When entering tick infested areas:

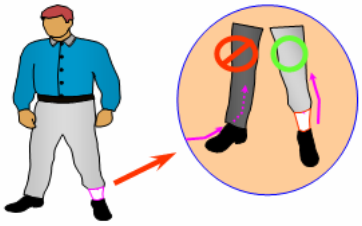


1. Stay on paved surfaces, bare soil and sand, and large expanses of well-mown grass.

2. Avoid Tick Habitats. Stay away from the edge of fields at the shrub line, entering wooded areas, and walking in high grass near wooded areas.
   - Unlikely: Roads, Sand, Tall trees, Isolated Vegetation
   - Possible: Low Grass, Mown lawns, Low tree branches
   - Very likely: Tall Grass, Shrubs

3. Stay out of tick areas when ticks are most active. Deer ticks are most active in predawn to mid-morning and again in late afternoon to dusk.
   Ticks prefer:

   - High Humidity
   - Shade
   - Early Morning & Early Evening
   - Spring, Summer, & Fall



4. When in tick-infested habitat, take special precautions to prevent tick bites, such as
   - Wear light-colored clothing (for easy tick discovery).
   - Tuck shirt into pants.

- Wear long pants and socks. Tuck the pant legs into the socks. This makes a barrier that keeps ticks off the skin of the legs.

5. Carefully check your entire body and small children after exposure to tick areas. Ticks can easily walk from ankle to shoulders in a few hours. Check after every two to three hours of outdoor activity for ticks on clothing or skin. Brush off any ticks on clothing before skin attachment occurs.

6. Do a thorough check of body surfaces for attached ticks at the end of the day. If removal of attached ticks occurs within 36 hours, the risk of tick-borne infection is minimal.

7. Supplement the clothing protection in Step 4 with the use of repellents. Two types of product can be used.

   a. **Permethrin:** *Permanone®, Raid Hornet Spray®, Sawyer®*
   BNL Stock K70764
   Irritant to eyes, toxic by ingestion
   Repels and kills ticks and other insects
   Can be used as lawn and foliage spray
   As PPE: can be sprayed ONLY on clothes that are then worn only when dry
   Must **not** be applied to bare skin .
   Some people may have allergic skin reactions.

   b. **DEET:** *Off!, Deep Woods Off!(r), Tick Guard®*
   BNL Stock 70766
   Irritant to eyes and mucous membranes, toxic by ingestion
   Repels ticks and other insects
   Does not kill ticks or insects
   Can be sprayed on skin and clothes
   - Do NOT spray on Fire Retardant Clothing (such as Nomex®)
   - Do not spray on cotton clothing used for arc flash protection

   Should not be sprayed on skin of children (possible allergic reactions)

Note: Not highly effective on ticks

What to do if a tick is found on a person:

1. If the tick is still walking, carefully remove it and place it into a plastic bag or jar. Discard it in the trash.

2. If the tick is attached, prompt, immediate removal of a tick lessens the chance of transfer of tick-borne disease:
   - If during Occupational Medical Clinic (OMC) hours: Go immediately to OMC for removal.
   - If it is during off-hour: Remove the tick yourself by using tweezers (grasping the tick as close to the skin as possible or use a credit card and scrap the tick off the skin. Grasp the mouthparts with tweezers as close as possible to the attachment (skin) site. Be careful not to squeeze, crush or puncture the body of the tick, which may contain infectious fluids. After removing the tick, thoroughly disinfect the bite site and wash hands. See or call a doctor if there are concerns about incomplete tick removal. Do not attempt to remove ticks by using petroleum jelly, lit cigarettes or other home remedies because these may actually increase the chance of contracting a tick-borne disease.

   - If there are signs that the tick fed (body is enlarged), place the tick into a plastic bag or jar. Microscopic identification of ticks taken off workers can be done via the sources listed on the Tick Identification Services page, Safety and Health Services Web site.

Control the likelihood of tick being in an area

1. Keep grassy areas mown.
2. Plant Engineering can spray areas for tick control (x-2345). Control lasts only a few days to weeks and will not be effective after a rainstorm. The number of spray events per area is restricted by state regulations.

For more information, contact/see:

•BNL Lyme Disease Training:

o http://training.bnl.gov/ for a web-based class on tick-borne disease prevention

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS

For more information, contact: OMC at x-3670

Lyme Disease

Lyme disease is caused by a spirochete (type of bacteria) *Borellia burgdorferi* transmitted by the deer tick (*Ixodes scapularis*). In New York over 40,000 cases have occurred since Lyme disease became reportable in 1986. In most cases, the tick must be attached for 48 hours or more before the bacteria can be transmitted.

Courtesy of Prof Gerold Stanek

Symptoms: Lyme disease may cause symptoms affecting the skin, nervous system, heart and/or joints of an individual. In 60%-80% of the cases, a large, reddish rash about 2 inches in diameter appears and expands around or near the site of the bite. Sometimes, multiple rash sites appear. Early symptoms may develop a week to a month after the tick bite. The early stage of Lyme disease is usually marked by one or more of the following symptoms: chills and fever, headache, fatigue, stiff neck, muscle and/or joint pain, and swollen lymph nodes. If left untreated, complications from late Lyme disease, such as arthritis, meningitis, facial palsy or heart abnormalities, may occur within a few weeks to months. These later symptoms may develop in people who did not have early symptoms or did not recognize them. Swelling and pain in the large joints may recur over many years.

Past infection with Lyme disease does not make a person immune. Information available at present indicates that re-infection is possible.

Testing: A serological test (blood test of patient) is available. Best results if test is done 4-6 weeks after tick bite. Consult a physician.

Ehrlichiosis (HME)

Human Monocytic Ehrlichiosis (HME) is caused by *Ehrlichia chaffeensis*, which is transmitted by the lone-star tick (*Amblyomma americanum*). In New York State, most cases of ehrlichiosis have been reported on Long Island and in the lower Hudson Valley. The majority of known cases have been in adults.

Symptoms appear one to three weeks after the bite of an infected tick. However, not every exposure results in infection. Symptoms of HME usually include fever, muscle aches, weakness and headache. Patients may also experience confusion, nausea and vomiting, and joint pain. A rash is not common. Infection usually produces mild to moderately severe illness, but may occasionally be life threatening or even fatal.

Testing: A serological test (blood test of patient) is available. Consult your personal physician.

Anaplasmosis (HGA)

Human Granulocyte Anaplasmosis (HGA) is caused by *Anaplasma phagocytophilum*, which is transmitted by the deer tick (*Ixodes scapularis*).

Onset of anaplasmosis generally begins within a week of a tick bite, and often includes **fever, severe headaches, malaise, muscle pains, and chills**. Other symptoms may include confusion, hemorrhages, and renal failure. Clinical manifestations of HGA can range from mild to life-threatening depending on the patient's age and general health.

Testing: Immunostaining or PCR test (blood test of patient) may be available. Consult a physician.

Babesiosis

Babesiosis is a parasitic infection caused by the protozoa *Babesia* resulting from the bite of the *Ixodes* tick (Deer Tick). In the United States, most of the hundreds of reported cases of Babesiosis have been caused by *Babesia microti*, a parasite of small mammals. Most reported cases of Babesiosis occur in the northeast, specifically in New York, Massachusetts, Connecticut, and Rhode Island.

Babesiosis is usually an asymptomatic infection in healthy individuals. The mortality rate is low. Most cases improve spontaneously without treatment. Babesiosis affects all age groups with similar frequency; however, patients older than 50 years are at increased risk for severe infection and death. The disease most severely affects patients who are elderly, immunocompromised, or have undergone spleen removal.

It is not known whether past infection with babesiosis can make a person immune. Standardized treatments for babesiosis have not been developed, but some drugs used in the treatment of malaria are effective in some patients with babesiosis.

Symptoms: Incubation period is from 1-4 weeks, sometimes as long as 8 weeks. Infections can occur without producing symptoms. The disease can cause fever, fatigue and hemolytic anemia lasting from several days to several months, weight loss, muscle and joint pain, depression, dark urine, nausea and vomiting, cough, shortness of breath; fever, shaking chills, jaundice, and malaise.

Testing: A serological test (blood test of patient) is available. Consult a physician.

Rocky Mountain Spotted Fever (RMSF)

RMSF is caused by the organism *Rickettsia rickettsii* found in the American dog tick (*Dermacentor variabilis*) in the Eastern United States. An estimated 4% of the American dog ticks are infected with *Rickettsia* species, but the vast majority of these are nonpathogenic *Rickettsia.* Therefore, the chance of an individual tick harboring *Rickettsia rickettsii* is slight. Approximately 600-800 new cases per year occur. Cases are geographically distributed: North Carolina and Oklahoma account for one-third of total cases reported. South Carolina, Tennessee, and Georgia accounted for the third, fourth, and fifth highest number of cases. Fewer than 50 cases are reported annually in New York State, most have occurred on Long Island.

Rickettsia is introduced into humans after an infected tick feeds for more than 6 hours. After an average of 1 week (3-12 days), the patient develops clinical manifestations of infection. Mortality rate from RMSF has been reported to be 4%, with death usually occurring 8 days after onset of symptoms. A significant portion of this mortality is due to delay in diagnosis and treatment. Incidence is highest in children (peak in children aged 5-9 years) and in males older than 60 years.

Symptoms: Symptoms usually appear within two weeks of the bite of an infected tick. RMSF is characterized by a sudden onset of moderate to high fever (which can last for two or three weeks), severe headache, fatigue, deep muscle pain, chills and rash. Rash typically begins around wrists and ankles, but may start on the trunk

or be diffuse at the onset. Fifty percent have a rash by the third day. Classic distribution of RMSF rash on palms and soles occurs relatively late in the course (in 43% of patients only after the fifth day of symptoms). Some reports have observed 36–80% of RMSF patients without the classic distribution of rash on palms and soles.

Approximately 10–15% of patients have Rocky Mountain **spotless** fever (more often in older patients and African American patients).

Southern Tick-Associated Rash Illness (STARI)

A rash similar to the rash of Lyme disease has been described in humans following bites of the lone star tick, *Amblyomma americanum*. The rash may be accompanied by fatigue, fever, headache, muscle and joint pains. This condition has been named southern tick-associated rash illness (STARI).

Image: Patient with STARI; 1) site of tick bite, 2) red, radial, expanding edge of rash. 3) central clearing.

Photograph used with permission from the Journal of Infectious Diseases.

The rash of STARI is a red, expanding “bulls eye” lesion that develops around the site of a lone star tick bite. The rash usually appears within 7 days of tick bite and expands to a diameter of 8 centimeters (3 inches) or more. The rash should not be confused with much smaller areas of redness and discomfort that can occur commonly at tick bite sites. Unlike Lyme disease, STARI has not been linked to any arthritic, neurological, or chronic symptoms.

The cause of STARI is unknown. Studies have shown that is not caused by *Borrelia burgdorferi*, the bacterium that causes Lyme disease. Another spirochete, *Borrelia lonestari*, was detected in the skin of one patient and the lone star tick that bit him. However, subsequent study of over two dozen STARI patients has found no evidence of B. lonestari infection. In the cases of STARI studied to date, the rash and accompanying symptoms have resolved promptly following treatment with oral antibiotics.

IV. DETAILS ON TICKS FOUND ON LONG ISLAND

Three types of tick are found on Long Island:

Deer Tick	Dog Tick	Lone Star Tick
- Lyme Disease - Babesiosis - Anaplasmosis	- Rocky Mountain Spotted Fever	- STARI; - Ehrlichiosis

Deer Tick Adult Female (left)

Dog Tick Adult Female (right) collected at BNL.

Adults Dog Ticks are active April to November.

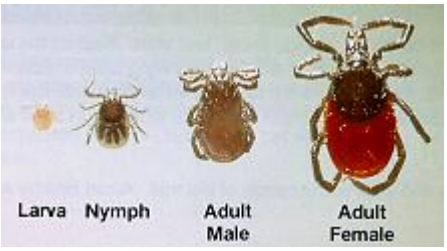
Scale: 10x, hatch marks on ruler are millimeters.

Deer Tick Adult Male (left) & Female (right) collected at BNL.

Adult Deer Ticks are active in March to Early June and Late August to November.

Scale: 10x, hatch marks on ruler are millimeters.

The three stages of **Deer Tick** Larvae (left), Nymph (second from left), Adult Male (second from right), Female Adult (right)



Engorged **Dog Tick** female.

Deer Tick nymph collected at BNL.

Nymphs are active in June, July, and August.

Scale: 30x, hatch marks on ruler are millimeters.

Dog Tick nymph collected at BNL.

Dog Ticks nymphs are active most of the year, especially in the fall.

Dog Tick Adult Male.

Lone Star Tick Adult female.

Ultraviolet Radiation - Sunburns & Snowblindness

I. HAZARD OVERVIEW

Sunburn is an acute skin inflammation that follows excessive exposure of the skin to ultraviolet radiation (UVR). It is detectable within 30 minutes of exposure to UVR. Less intense or shorter-duration exposure to UVR results in an increase in skin pigmentation, known as tanning, which provides some protection against further UVR-induced damage.

Sunburn is usually associated with minimal short-term injury. Most cases resolve spontaneously with no significant long-term scarring. In rare cases, sunburn may be so severe and diffuse that it results in second-degree burns, dehydration, secondary infection, shock, or even death.
Illness and death associated with long-term sun exposure is related primarily to the development of skin cancers. Sunburn risk is increased in summer months during mid-day to early afternoon exposure, but can occur on overcast days and in the winter.

Strong UVR from the sun can cause inflammation of the cornea leading to photokeratosis or "snowblindness." Symptoms of this kind of an infection include the eyes becoming reddish, a sensitivity to light, enhanced excretion of tears, the feeling of having some dirt in one's eye, and pain. The trauma appears 3-12 hours after exposure. Eye cells quickly regenerate, so symptoms will normally disappear within a few days. A long-term exposure to UVR may cause permanent damage to the cornea. UVR also enhances the dimming of the eye's lens, which means that potential cataracts begin to evolve at earlier ages. A cataract is a partial or complete opacity of the lens of the eye and the largest cause of blindness in the world. Risk is increased when working outdoors in bright sunlight around snow and surface water.

II. PREVENTION AND PROTECTION RECOMMENDATIONS

- Prevention is the most effective therapy for sunburn. Individual and community educational programs can be effective in decreasing overall sun exposure or increasing use of sunscreen or protective clothing.
- Avoid sun exposure, especially during the period of peak solar radiation flux (from 10 am to 2 pm).
- Wear protective clothing, including hats or sun visors. Significant transmission of UVR may occur through some clothing, resulting in sunburn on clothed skin.
- Use sunscreens with an adequate sun protection factor (SPF). SPF refers to the time needed to produce sunburn on protected skin as a factor of the time to produce sunburn on unprotected skin.
  - In general, use of a sunscreen with an SPF of 30 is sufficient.
  - Apply at least 30 minutes prior to sun exposure and reapply often.
  - Use waterproof sunscreens when swimming or perspiring heavily.
  - Physical barriers (e.g., zinc oxide, talc, titanium dioxide) provide excellent protection but are less appealing cosmetically.

To prevent photokeratosis, wear sunglasses. Plastic and glass lenses screen 99% or more of the harmful UV light.

III. HEALTH HAZARD INFORMATION & RECOMMENDATIONS

For more information, contact: OMC at x-3670

Minor cases of sunburn resolve spontaneously over 4-7 days with scaling and skin peeling. Long-term exposure to UV radiation can cause harmful effects on the skin, including premature aging and wrinkling of the skin, development of premalignant lesions, and development of malignant tumors. Excessive exposure of the eyes to UV radiation can lead to discoloration of the lens and nuclear cataract formation.

- Patients at highest risk typically have fair skin, blue eyes, and red or blond hair.
- The acute inflammatory response is greatest 20-24 hours after exposure.
  - Erythema (redness)
  - Warmth
  - Tenderness
  - Edema (liquid pooling)
  - Blistering and fever (in severe cases)

TREATMENT RECOMMENDATIONS

- Minor sunburn can be relieved to some extent with cool compresses or a cool bath. Nonprescription analgesics and Aspirin, Ibuprofen, or Acetaminophen for the treatment of pain and inflammation may be used.
- Inpatient care is indicated for severe burns, secondary infection, or control of severe pain.