



Document 600

SITE SPECIFIC HEALTH AND SAFETY PLAN

CHAPTER: [Rensselaer Polytechnic Institute](#)

COUNTRY: [Panama](#)

COMMUNITY: [Sandubidi, Isla Popa II](#)

PROJECT: [Panama Water Project](#)

TRIP TYPE: [Implementation](#)

TRAVEL DATES: [January 5-14, 2015](#)

APPROVAL DATES OF PREVIOUS HASPs:
[August 2013](#)

PREPARED BY

[Jesse Freitas, Allison Luongo](#)

[Oct 7th 2014](#)

ENGINEERS WITHOUT BORDERS-USA

www.ewb-usa.org

DIRECTIONS & MAP TO MEDICAL FACILITY



Medical Facility:

Clinica San Rafael

Finca 12 o Ave. 17 de Abril

Changuinola,

Panama

Travel Time to
Medical Facility:
2 Hours

Directions:

- 1) Take boat to Isla Colon
- 2) Take boat to mainland
- 3) Drive to Changuinola

PERSONAL HEALTH CHECKLIST (Form 603)

Name: _____

Personal Health Checklist

This form must be completed by each person who is traveling and a copy should be brought along on the trip with the Site Specific Health and Safety Plan, by the Health and Safety Officer. **This form is not to be submitted to the EWB-USA office.** Consult the WHO <http://www.who.int/ith/preface.html> and CDC <http://www.cdc.gov/travel/> websites for travel and health advisories for the area.

Name: _____ Date of Birth: _____ Age: _____

Social Security#: _____ Home Address (city, state, zip): _____

Passport#: _____

Phone: (____) _____ E-Mail Address: _____

Emergency Contact: (Name and relationship): _____

Phone: (____) _____ Alternative Phone: _____ E-Mail address: _____

Travel and Evacuation Insurance Information: (www.specialtyrisk.com is one source)

The plan must cover volunteer when s/he is out of the country and cover volunteer's evacuation in case of an emergency.

Carrier or Plan Name: _____ Carrier address: _____

Name of Insured: _____ Insurance ID number: _____

Carrier Phone Number _____

Allergies: (Describe Reaction and management of the reaction. Attach additional sheets if needed)

Medication Allergies: _____

Food Allergies: _____

Other Allergies: (insect stings, hay fever, plants, animals, dust, etc.) _____

Medications Currently Taking: Please list all medications (including over-the-counter or non-prescription drugs) taken routinely or in case of emergency. Bring enough medication to last the entire trip. Keep medications in the original packaging/bottle that identifies the prescribing physician, the name of the medication, dosage, frequency of administration.

♦ I do not take any medication on a routine basis **OR**

♦ I take the following medications: (include birth control and all things that are taken on an as needed basis as well e.g. Epinephrine for allergic reactions, asthma inhalers... add additional pages as needed)

Med #1 _____ Dosage _____ Times each day _____ Reason _____

Med #2 _____ Dosage _____ Times each day _____ Reason _____

Name: _____

Personal Health Checklist

Med #3 _____ Dosage _____ Times each day _____ Reason _____

Eyewear: If you wear glasses or contact lenses, make sure you have an extra pair and sufficient contact solution, etc. Contact lenses are often problematic due to weather conditions, dust, and poor sanitation. This can make it difficult to keep contact lenses clean and increase the risk of eye infections. **Bring a good pair of sunglasses.**

Current/Past Health History:

Have you had a recent injury, illness or infectious disease? No _____ Yes _____

Do you have diabetes? No _____ Yes _____ Treatment _____

Do you have asthma? No _____ Yes _____ Treatment _____

Ever had seizures? No _____ Yes _____ Treatment _____

Do you have any psychiatric conditions that may require treatment? No _____ Yes _____

Any other Health issue someone should be aware of in an emergency? _____

What is your blood type? _____

Tuberculosis Screening

Most Recent TB PPD Skin Test: Date _____ Size (mm) _____ Result _____

(PPD test should be placed within two years prior to travel and repeated 3 months after return.)

If you have had a positive PPD Skin Test in the past, date of your most recent Chest X-ray and result: _____

Have you taken treatment for latent TB infection? When? (date) _____

Immunization Record: (Write in the dates you received the following immunizations):
(Remember: Keep a copy at home and travel with your yellow international immunization card.)

Required Immunizations:

DPT/DOPT/DtaP: #1 _____, #2 _____, #3 _____, #4 _____, #5 _____

Td (Tetanus) booster: (should be within the past 7 years): _____

Hepatitis A: #1 _____, #2 _____ (these must be 6 months apart)

MMR (Measles/Mumps/Rubella) #1 _____, #2 _____

Polio (oral or injected) #1 _____, #2 _____, #3 _____, #4 _____

Polio booster: _____

Yellow Fever (may be required, take your stamped WHO immunization card when you travel): _____

Japanese Encephalitis (may be required, depends on country): _____

Highly Recommended Immunizations:

Varicella (chickenpox): #1 _____, #2 _____ or Date you had the disease _____

Hepatitis B: #1 _____, #2 _____, #3 _____

*may do accelerated series, pending approval by health care provider, if unable to complete series before travel.

Typhoid: _____

Influenza: _____

Meningitis: _____

Malaria Prophylaxis (drug, dose, schedule): _____

Signature of physician or travel clinic nurse: _____

Name of physician: _____ Phone: _____ Alternative phone: _____

Volunteer Signature: _____ DOB: _____

SIGNATURE PAGE

Engineers Without Borders - USA Site-Specific Health and Safety Plan

Project Information

Name: Panama Water Project

Location: Isla Popa 2, Bocas Del Toro, Panama

Chapter: Rensselaer Polytechnic Institute

Travel Dates

Start Date: 5 January 2015 End Date: 14 January 2015

Project Team H&S Representative Signatures

The undersigned confirm that all the information contained in this document is current and correct as of Oct 7th 2014 and that all travel team members will be briefed on the contents prior to travel.

Health & Safety Officer #1: Tom Rebbecchi Date: Oct 7th 2014

Health & Safety Officer #2: Anna Thonis Date: Oct 7th 2014

Project Lead: Jesse Freitas Date: Oct 7th 2014

U.S. Check-In Contact: Zlata Chernyshenko Date: Oct 7th 2014

Professional Mentor: Chip Kilduff Date: Oct 7th 2014




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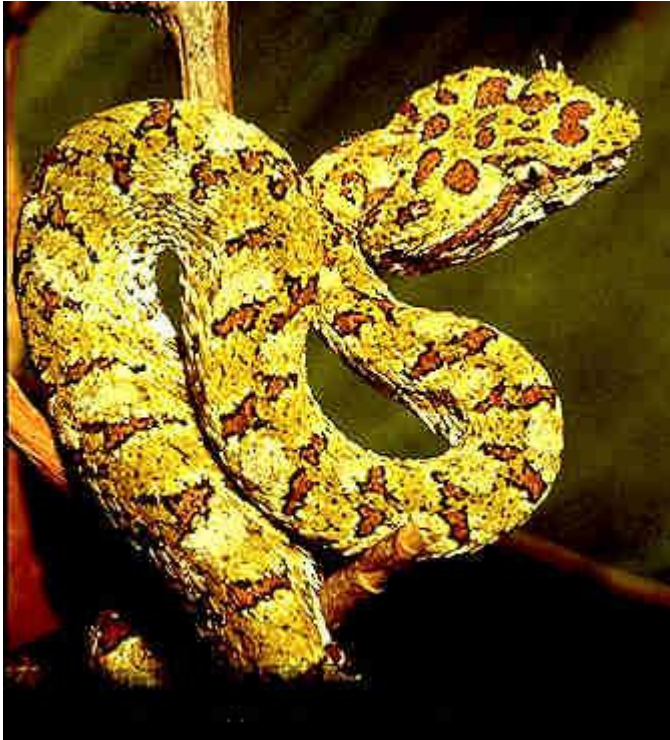


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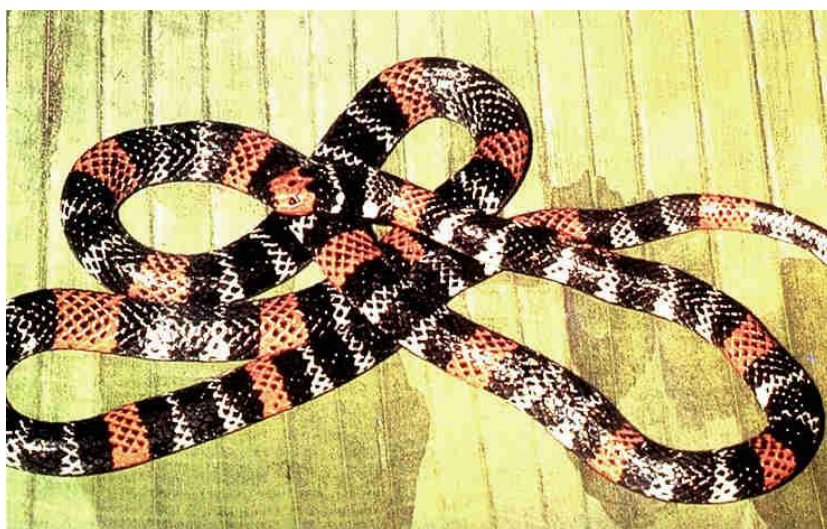


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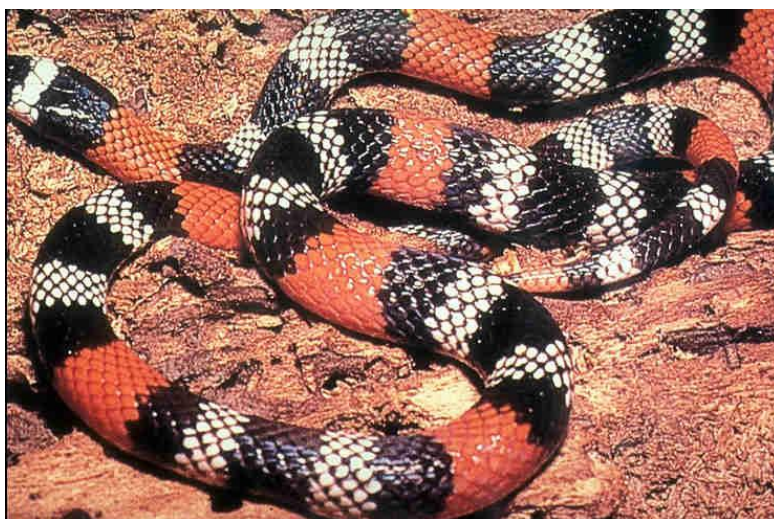


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ROOT CAUSE ANALYSIS (TO BE COMPLETED BY PROJECT TEAM WORKING TOGETHER WITH H&S COMMITTEE MEMBERS)				
PROJECT NAME:		PROJECT PHASE:		
PROJECT LOCATION:		CHAPTER:		
REGIONAL TAC:		TRIP DATES:		
# Root Cause and Contributing Factors: Conclusion (Describe in Detail Why Incident / Near Miss Occurred)				
1				
2				
3				
4				
5				
Root Cause(s) Analysis (RCA):				
1. Lack of skill or knowledge		5. Correct way takes more time and/or requires more effort		
2. Lack of or inadequate operational procedures or work standards		6. Short-cutting standard procedures is positively reinforced or tolerated		
3. Inadequate communication of expectations regarding procedures or work standards		7. Uncontrollable		
4. Inadequate tools or equipment or equipment malfunction/failure				
RCA #	Solution(s): How to Prevent Incident / Near Miss from Recurring	Person Responsible for Implementing Solution	Due Date	Closure Date
Investigation Team Members				
Name	Indicate Project Team HSO, Project Team Member, EWB H&S Committee member, EWB Staff, other		Date	
Results of Solution Verification and Validation				
Reviewed By				
Name	Indicate Project Team HSO, Project Team Member, EWB H&S Committee member, EWB Staff, other		Date	

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ATTACHMENT J: EMERGENCY RESPONSE PLAN (FORM 614) 1

1.0 INTRODUCTION

1.1 Site Background & Description

The community of Sandubidi on Isla Popa II in Bocas del Toro is comprised of 250 people, including 100 children. The people of Sandubidi get sick from drinking collected rainwater or water gathered from a water source located two hours from the village. The implementation of a water collection and filtration system will improve the health of the people of this community. The purposes of this implementation trip are to complete additional testing for the water sources in Sandubidi, strengthen EWB-RPI's direct relationships with several parties, and implement the catchment system and filtration systems described in the pre-implementation report.

Relationships will be further developed with the community members, representatives from EWB-Panama, local universities, and local water-related organizations.

1.2 History of Prior Activities At The Site

Beginning at the project's onset in November 2010, EWB-RPI worked with the community's Peace Corps volunteer, Kate Douglass. Kate recently (June 2012) completed two years living in the community, spending time teaching English and guiding the community's tourism efforts.

From January 6-12, 2012, five members of EWB-RPI visited the community, establishing professional relationships with community members, conducting preliminary site testing of water and environmental conditions, establishing external relationships for possible partnerships, and documenting a geographical and cultural understanding of the community.

Since the first assessment trip, the community members worked to install temporary rainwater catchment systems at a majority of the homes, but within two months, some of the tank stands showed a need for repair. No effort was made to access alternative water sources or improve the water quality.

1.3 Contractors And Other Parties

The site implementation and coordination trip by EWB-RPI will involve working with the village of Popa II and representatives of EWB-Panama.

The site implementation and coordination trip may require assistance from 1-2 individuals from the host community and is not anticipated to involve contractors. Tasks will include: Travel to and from the potential sites, collecting water and soil samples for testing, and a general topographic survey of the area surrounding the community and potential water source. Proper instruction on hazards and safety procedures and equipment will occur prior to any task to all involved. The highest risk activities will be performed only by knowledgeable individuals on the EWB-RPI travel team.

Daniel Viagra – Community President

Cell – 011-507-6492-3211

Larry Belkin – CH2M HILL, EWB-Panama

Larry.Belkin@ch2m.com

507-276-4511

Nearest Heath & Ambulance Services

(approximately 2 hours by boat):
Clinica San Rafael, Changuinola, Panama

2.0 ORGANIZATION AND COORDINATION

2.1 Key Project Personnel

The key project personnel are identified in Table 2.1.

Table 2.1 – Key Project Personnel

POSITION	TEAM MEMBER	EMAIL	PHONE	CHAPTER
Project Lead	Jesse Freitas	Freitas.jesse@gmail.com	978-303-7536	EWB-RPI
Chapter President	Zlata Chernyshenko	chernz@rpi.edu	914-382-0405	EWB-RPI
Faculty Advisor	Chip Kilduff	kilduff@rpi.edu	518-276-2042	EWB-RPI
Professional Mentor/Technical Lead	Alex Michaels	alexanderdmichaels@gmail.com	518-275-7621	EWB-RPI
Translator	Ambar Mena	menaa2@rpi.edu	857-919-5829	EWB-RPI
In-Country Partner	Larry Belkin	Larry.belkin@ch2m.com	507-276-4511	EWB-Panama

2.2 Health and Safety Personnel

The health and safety personnel are identified in Table 2.2.

Table 2.2 – Health And Safety Personnel

POSITION	TEAM MEMBER	EMAIL	PHONE	CHAPTER
Health & Safety Officer #1	Tom Rebbecchi	rebbet@rpi.edu	904-563-0197	EWB-RPI
Health & Safety Officer #2	Anna Thonis	thonia@rpi.edu	908-279-4875	EWB-RPI
U.S. Check-In Contact	Zlata Chernyshenko	chernz@rpi.edu	914-382-0405	EWB-RPI

2.3 Team Member Responsibilities

The team member responsibilities are identified in Table 2.3 “Team Member Responsibilities”. Travel Team subject to change since travel is occurring in January 2015.

Table 2.3 – Team Member Responsibilities

TEAM MEMBER	ROLE
Ambar Mena	Translator, Water Testing Leader
Tom Rebbecchi	Documentation, Construction Leader
Jesse Freitas	Project Leader
Anna Thonis	Translator, Travel Coordinator
Kyle Geisler	Rain Catchment Construction Leader
Mike Kubista	Construction Leader
Susan Welt	Mentor/ Technical
Dr. Chip Kilduff	Mentor

3.0 TASK DESCRIPTIONS

3.1 Specific Scope of Work

The implementation trip will involve the following specific work tasks:

1. Community Relationship Building: Continue building relationships and contacts within the community, and confirm ability to access them from the USA. Generate community ownership through citizen's interest and engage citizens to educate them on maintaining the implemented systems.
2. Water Filtration Implementation: The EWB-RPI team will implement four biosand filters using materials from a local hardware store.
3. Pavilion Rain Catchment Construction: EWB-RPI will implement a rain water catchment system in the community on the pavilion close to the school as well as a first flush component and tank stand for use as a model for future implementation in the community.
4. Education: The EWB-RPI team will participate in a discussion with the community's leaders who participate on the water board and help conduct the education program of maintaining the implemented systems.

The implementation trip will involve the following travel:

Table 3.2: Point To Point Travel Details

TRAVEL DATES	TRAVEL DESCRIPTION
January 5, 2015	Arrive in Panama City airport Meet with EWB-Panama reps
January 5-6, 2015	Travel on via flight to Bocas Del Toro
January 6, 2015	Taxi and water taxi to Isla Popa II
January 6-13, 2015	Team stays in Isla Popa II
January 13-14, 2015	Travel to Panama City via flight from Bocas Del Toro
January 14, 2015	Travel to New York City from Panama City

3.3 Project Schedule

According to the example, the tasks cannot be differentiated enough to designate start and end dates. All of the trip tasks will be completed over the duration of the trip.

4.0 TASK SAFETY AND HEALTH RISK ANALYSES

4.1 Preliminary Evaluation

The anticipated tasks and associated hazards are listed in the attached Task Hazard Analyses, Attachment C. A brief summary of tasks and associated general hazards are further defined in the following table. This analysis forms the basis for health and safety planning and preparations. It is also the primary basis for execution of the plan in the field, but recognizes that additional or reduced risks may be encountered in the field that will require modification to the plan by the HSO.

The tasks associated with construction occur in six phases. Throughout all phases, safety concerns include heat stress and remote areas. The first phase is transporting materials to Isla Popa II from Isla Colon. Materials will mostly be delivered rather than retrieved by the travel team, so there are few hazards involved. The second phase of construction is preparing the wood and assembling tank stands. A potential risk involved in this is using hand and power tools. Phase three is installing roof straps and preparing the gutters. Phase four involves installing piping for the first flush system, preparing the ground for tank stands and drainage, and installing tanks. Safety concerns for phases three and four are ladders, structural hazards, hazardous materials, and use of hand and power tools. The fifth phase is constructing the tank housing, which would involve the safety risks of ladders and use of hand and power tools. The final phase of construction is preparing the biosand filters and checking the system. Potential hazards are silica and working near water. Please refer to Attachment C for a table of potential health and safety risk assessment.

4.2 Security

As of July 1, 2012, the ISOS Rating for Panama is LOW. The Darien area of Panama has a HIGH rating and the city of Colon (not to be confused with Isla Colon) has a rating of MEDIUM. However, EWB-RPI does not intend to travel to these areas or through these areas which are in the eastern part of Panama. EWB-RPI plans to stay within the western part of the country. The summary of risks is as follows:

“Business travelers face LOW travel risks, with occasional exposure to street crime. However, crime has risen in recent years, particularly in Colón, where both petty and violent crime present significant risks. Muggings and theft from vehicles are common, and foreign visitors are often targeted because of their relative wealth. Visitors are advised not to walk around Colón at any time and to visit the city during the day only. Travelers should avoid the Darién region because of the increased risk of kidnapping or violent crime by Colombian illegal armed groups and drug-trafficking groups. Elsewhere, the risk from kidnapping is negligible.”

As of July 2012, the U.S. State Department has no Travel Warnings for Panama. This trip, if approved by the TAC, will be registered with the U.S. Embassy. Up-to-date security information can be found by calling 1-888-407-3737 in the U.S./Canada or 202-501-4444. This line is open from 8am-8pm Eastern Time M-F.

The U.S. State Department security entry on Panama reads as follows.

“Avoid travel to remote areas of the Darien Province off of the Pan American Highway. U.S. Embassy personnel are only allowed to travel to the restricted border areas of the Darien and San Blas Provinces on official business and with prior approval of the Embassy’s Regional Security

Officer and Deputy Chief of Mission. This restricted area encompasses the Darien National Park as well as some privately owned nature reserves and tourist resorts. The general remoteness of the region contributes to the potential hazards. Due to scarcity of roads, most travel is by river or by foot path. This, combined with spotty medical infrastructure outside of major towns, makes travel there potentially hazardous. While the number of actual incidents remains low, U.S. citizens, other foreign nationals and Panamanian citizens are potentially at risk of violent crime, kidnapping, and murder in this general area. Moreover, all around the Panama-Colombia border area the presence of Colombian terrorist groups, drug traffickers and other criminals is common, increasing the danger to travelers. The Revolutionary Armed Forces of Colombia (FARC) operates in Panama's Darien Province, including in areas far removed from the immediate vicinity of the Panamanian-Colombian border. Note: The Secretary of State has designated the FARC, the National Liberation Army (ELN) and the United Self-Defense Forces of Colombia (AUC) as Foreign Terrorist Organizations.

Similarly, U.S. citizens should not travel to the area of Panama referred to as the "Mosquito Coast," an extremely remote and inaccessible area along the Panamanian north coast bounded by Boca de Rio Chiriquí on the west and Coclé Del Norte on the east and stretching inward from the coast for five kilometers. Embassy personnel are only allowed to travel to this area on official business and with prior approval of senior Embassy management. Access to the region is almost exclusively by boat and/or aircraft. The area may also have a few unimproved roads and/or paths which are not marked on maps. This may be particularly true in the mining area along the Petaquilla River. Sections of this coastline are frequently used for narco-trafficking and other illegal activities.

From time to time, there may be demonstrations protesting internal Panamanian issues or, more rarely, manifestations of anti-American sentiment by small but vociferous groups. While most demonstrations relate to labor disputes or other local issues and are typically non-violent, it is nonetheless a good security practice to avoid demonstrations. The Panamanian National Police generally do not use force to break up demonstrations, but there have been occasions when tear gas and/or riot control munitions have been used. Demonstrations and marches can and do occur in many locations around the country, to include areas along the PanAmerican highway. U.S. citizens should exercise caution near the campus of the University of Panama, the Presidential Palace, and the National Assembly, which have been the scenes of frequent protests.

Since February 2012, protestors have blocked remote roadways and the Pan American Highway on an intermittent but regular basis, sometimes for periods lasting several days, and sometimes trapping travelers on the roads without access to food and water. During these extended road closures the security situation can be tense and the potential for violence between Panamanian authorities and protestors is a real possibility. U.S. citizens traveling by road outside Panama City should travel with full fuel tanks, keep extra potable water and food in their vehicles, and ensure cell phones are charged during their travel. For the most recent information on possible road closures, the Embassy advises U.S. citizens to monitor local news and consult local police.

Visitors should be cautious when swimming or wading at the beach. Some beaches, especially those on the Pacific Ocean and those in Bocas del Toro Province, have dangerous currents that cause drowning deaths every year. These beaches are seldom posted with warning signs or monitored by lifeguards.

On the Pacific and Atlantic coasts, boaters should be wary of vessels that may be transporting

narcotics, illicit materials, and illegal immigrants to and from Colombia. Bales and specially wrapped packages containing narcotics have been found floating in the ocean or lying on remote beaches. Boaters and beachgoers are warned to steer clear of these items, to not pick up or move these packages and to immediately report their location to the Panamanian authorities.

Special permission is needed from the Ministry of Government and Justice and the National Environment Authority to visit the National Park on Coiba Island. The island is an abandoned penal colony, although on occasion, prisoners are sent there to care for the animals. Boaters should avoid the southeastern coast of Kuna Yala Comarca (San Blas Islands), south of Punta Carreto, on the Atlantic Coast.”

4.3 Chemical Hazards

Chemical hazards that may be present on site are PVC vapors and silica sand dust.

PVC produces vapors which can cause eye irritation, dizziness, and respiratory problems. When heated, PVC can create fumes that if inhaled may lead to nervous system damage and narcosis. PVC vapors are highly flammable and are heavier than air, causing them to settle in an area that is poorly ventilated. Skin contact with PVC can cause a painful, red rash, and repeated skin exposure to PVC can result in dermatosis. Ingestion of PVC can cause nausea, vomiting, and diarrhea, and may even cause kidney and liver damage.

Silica sand dust is made up of very small particles which may be breathed in by people working with the substance. Prolonged breathing of silica sand dust can result in silicosis, where fine sand particles in the lungs can cause thickening and scarring in the lung tissue. This makes it hard for an affected person’s lungs to stretch, reducing breathing ability. Common symptoms of silicosis include shortness of breath, severe coughing, and weakness, and prolonged exposure to silica sand dust has been linked to lung cancer. Other complicating factors of silicosis include tuberculosis, heart attacks, and connective tissue disease.

Relevant management strategies include:

- Falling Objects, Punctures, Abrasions, Dust, and Noise (Personal Protective Equipment)

4.4 Biological Hazards

Waterborne and food-borne diseases are a concern; as a result the EWB - RPI team will utilize food and water transported to the site from established safe sources. Properly designed lavatory facilities will be constructed as needed at the site. Recommended vaccinations include malaria, yellow fever, typhoid, and hepatitis A.

In addition, working in a moist tropical environment will increase the risk of exposure to parasitic organisms. Such exposure is also possible through improperly prepared food and drinking unclean water. Team members will limit prolonged exposure to wet environments and eat only safely prepared food and drink bottled water. No direct contact with water will be allowed, rubber boots will be required for those working in water

Mosquitoes are common in Panama and malaria is a concern for travelers to the region. EWB – RPI team members are recommended to take anti-malaria drugs while on site and team members will sleep in mosquito nets.

A post trip health assessment is recommended for all travelers 2-4 months after return from the trip. All general information regarding possible adverse health effects from the trip will be submitted to EWB-USA by the Health and Safety leads to aid in future trip preparations.

Panama has several common species of venomous snakes and insects. Summaries and photos of these snakes and insects have been included in the Appendix.

Relevant management strategies include:

- TH 10 Housekeeping
- TH 13 Working Over/Near Water
- TH 26 Biological Hazards

4.5 Physical Hazards

Physical hazards exist in every significant phase of the project, from traveling on foot and in vehicles to and from the project site, to all tasks listed in Section 3.1. The following physical hazards have been identified at the project site:

- *Heat stress* is possible at all times, particularly at times of heavy manual labor.
- *Foot care* is also important at all phases of the site investigation process due to the site only being negotiable by foot.
- *Rough terrain* is present at the project site in the form of brush and grasses but no rocky ground or cliffs are present nearby
- *Housekeeping* is important at all times both at the project site and at the community space of residence to limit clutter.
- *Remote area work* will be performed and proper precautions must be followed such as not traveling alone
- *Water Transport* will be used to travel back and forth from Isla Popa 2. Boating precautions will be followed when boating.

Relevant management strategies include:

- TH 02 Inclement Weather
- TH 03 Heat stress
- TH 05 Foot care
- TH 09 Rough Terrain
- TH 10 House keeping
- TH 11 Structural Hazards
- TH 12 Remote Areas
- TH 13 Working Over/Near Water
- TH 16 Working At Elevations and Fall Protection
- TH 26 Biological Hazards
- TH 31 Falling Objects, Punctures, Abrasions, Dust, and Noise

5.0 COMMUNICATIONS

5.1 On Site Communications

The project team will have the following on site means and methods of communication while on site and traveling thru the country:

5.1.1 Cell Phones

The team will rent a satellite phone prior to the trip. It is expected cell phone coverage does exist at the project site. The project manager and primary health and safety officer will have possession of the satellite phone

The following numbers will be programmed into all cell phones when they are purchased:

- Team Cell Phone Numbers
- Local NGO Community Contact
- Local Ambulance Service
- Community President
- US Check in

The following directions are special dialing and operating instructions for the cell phones:

- None

5.1.2 Radios

The project team also will use a set of 2-way radios for distance communication among the group. The radio frequency will be selected while the radios are in use.

5.1.3 Hand Signals

Hand signals will be used as a last resort and Task Hazard management strategy TH 26 “Hand and Emergency Signals” will be followed when hand signals are used. The team will follow the task hazard management strategy outlined in TH 24 ‘Hand and Emergency Signals’ when hand signal use is required.

5.1.4 Emergency Signals

The likelihood of needing emergency signals is likely to be slim but may be necessary in the event of a storm, natural disaster, or security situation. The team will follow the task hazard management strategy outlined in TH 24 ‘Hand and Emergency Signals’ when emergency signal use is required.

The team will use the following radio signal to indicate an emergency one (1) long sound, then on (1) short sound, followed by one long sound. After such is sent, the team will use a short sound to indicate to come to the location the team is in trouble or one (1) long sound to indicate the team needs to meet at the home base outlined in section 6.0.

5.1.5 Translator Names

For this trip, our team will not require the use of external translators because our travel team will have Ambar Mena and Vincenz Buhler, who are fluent in Spanish, in addition to the local contacts Larry Belkin other members of EWB Panama.

5.2 Offsite Communications

The project team will have the following off site means and methods of communication while on site and traveling thru the country:

5.2.1 Cell Phones

Team members will bring their own cell phones for use on the trip. It is expected that cell phone coverage does not exist at the project site. However, team members will keep their cell phones with them in the case that coverage is found while traveling. The following numbers will be programmed into all cell phones:

- U.S. Check In Contact
- International SOS
- U.S. Embassy
- EWB Chapter Advisor

The following directions are special dialing and operating instructions for the cell phones:

- None

5.2.2 International SOS

EWB-USA has contracted with International SOS, to provide 24-hour access to the latest health, safety and travel advice worldwide. Their informational website provides information about vaccinations, country safety, appropriate hospitals and the political stability within the country to which they are traveling. We strongly recommend that all EWB-USA members visit the ISOS website and research the country to which you will be traveling to. You may access the service provided by ISOS through their website www.internationalsos.com or by calling 215.942.8226. Please note that you will need EWB-USA's membership number: **11BCPA000270**.

Additionally, ISOS provides support to EWB-USA members who face an emergency while traveling on an approved EWB-USA trip. **If you are currently traveling abroad and need emergency assistance, contact ISOS immediately at 215.942.8226. You will need to provide them with the EWB-USA membership number 11BCPA000270.**

5.2.3 Email

The project team will not have access to email.

5.2.4 Local Medical Clinic / Nearest Medical Professional

The primary contact will be the EWB Panama representative. However, if the EWB Panama member is not available, then any member of the residents from the community can help. Please see the list of individuals with cell phones listed above in the contact information for the translator is located in "Table 2.1 – Key Project Personnel".

Medical and ambulance service are available approximately 2 hours away by boat at Clinica San Rafael in Isla Colon, Panama

5.2.5 Fire Response

Fire response is provided by the community.

5.2.6 Police Response

No public police response is available.

5.3 U.S. Check-In Contact

The US Check-In Contact is Zlata Cheryshenko. She will be contacted on arrival via phone and given a trip update. Periodic updates, no more than daily, will be provided if a connection exists. Internet access and cellphone reception near the project area can be unreliable, and so daily communication may not be possible.

If the team fails to make contact, and she is unable to reach the team via team cellphone or text message within 48 hours, she will contact the EWB-USA Emergency number.

6.0 PROTOCOLS

6.1 Task By Task Health & Safety Protocols

The following health and safety considerations / practices (i.e., protocols) will be used during the site implementation trip. The team will focus on accident prevention throughout the entire trip and Attachment I contains the detailed task hazard management strategies that will be employed to prevent injuries on each of these project-specific protocols.

01 Noise And Hearing Conservation

Though the team does not anticipate working near heavy equipment during the trip, power tools may be used. Power tools may only be handled by experienced team members, who will take necessary precautions to prevent hearing damage.

02 Inclement Weather

Inclement weather exists in the form of hot humid weather and the potential for torrential rainfall. Wide brimmed hats, plenty of hydration, and light colored loose clothing are recommended for participants. The risk of heavy rainfall is minimal due to work occurring in the dry season, however light rain storms are common. Shelter is available in the nearby host community for moisture sensitive equipment.

03 Heat Stress

Bottled water for the day will be purchased every morning at the hotel the group will be staying at. Baggies of clean water are available from local merchants in the event of an emergency. Ample shade will be available for workers to take breaks from the heat. Lightweight, light-colored, loose-fitting clothing will be recommended. Sunburn affects a body's ability to cool itself and causes a loss of body fluids. It also causes pain and damages the skin. Wide-brimmed hats, sunglasses, and sunscreen of SPF 15 or higher (the most effective products say "broad spectrum" or "UVA/UVB protection" on their labels) 30 minutes prior to going out are all recommended to combat heat stress and exposure to ultraviolet radiation.

When working in the heat, monitor the condition of your co-workers and have someone do the same for you. Heat-induced illness can cause a person to become confused or lose consciousness.

04 Cold Stress

Given the time of travel, the team does not expect to encounter a cold stress situation.

05 Footcare

Sturdy shoes or hikers will be required at all times. Socks made specifically for comfort and breathability will also be highly advised.

06 Confined Space

A confined space issue will exist during inspection of the water holding tank because it will have limited access. The team will utilize a lanyard and tri-pod when we are inside the tank.

07 Hot Work

The team will not be using torches, power hand tools, or chain saws so we do not expect to encounter any hot work situations.

08 Manual Lifting

Training in proper lifting will be provided ahead of time, and sturdy gloves for protection will be available for a variety of tasks. The team does not expect to encounter situations that require heavy lifting, but because of these wide spectrum of tasks that could involve heavy lifting and the ease with which one can stay safe, this protocol is listed.

09 Rough Terrain

All team members will be fit enough to traverse rough terrain and have appropriate footwear to do so.

10 Housekeeping

All team members will be expected to keep their personal spaces at the hotel free of clutter. Everyone will participate in grounds keeping of the site at the end of the day.

11 Structural Hazards

Structural hazards may exist throughout the project area primarily in the form of deteriorated conditions of existing containers (drums, tanks) and buildings (including associated appliances). If any further repair of the water system is required, excavations and trenches present structural hazards as well.

12 Remote Areas

Due to the remote nature of the site, everyone is required to travel in groups, if possible with an interpreter and with one of the team's mobile phones. Everyone must inform the Project Manager before leaving the vicinity of the site.

13 Working Over/Near Water

Water may be encountered while working near the existing water source or storage tanks. No direct contact with the water will be allowed. If water is encountered, waterproof boots will be worn at all times.

14 Traffic

Roadway work will not be an issue. Materials will generally be delivered to the project site instead of retrieved by the team.

15 Heavy Equipment Operations

The EWB-RPI team does not expect to encounter heavy equipment on this assessment trip.

16 Fall Protection

No hazardous height situations are expected on this trip, but large falls will be avoided.

17 Ladders

If ladders are necessary they will be first inspected and placed securely before use. In addition there will be other members there to help stabilize ladders in use.

18 Shoring and Trenching

There will be no excavations.

19 Hazardous Materials Use and Storage

No hazardous materials will be used.

20 Demolition

The team will perform visual inspections only so the team does not expect to encounter a demolition type of situation.

21 Active and Abandoned Utilities and Landmines

The team does not plan to do any digging. No landmines are present in the area.

22 Electrical Safety

The team will wear gloves and isolated shoes while working on any electrical item. Work is minimal.

23 Hand and Power Tools

The team will possibly be handling power tools while on this trip. All hand and power tools (if any) will be inspected daily for the proper safety devices (i.e., guards, loose blades, damaged cords, etc.) prior to the tools use. Power tools may be used only by an experienced team member.

24 Hand and Emergency Signals

The team does not expect to use hand and emergency signals during the trip, but to be proactive we will perform a training session prior to travel, on the first day we are in the country, and as necessary during the trip.

Hand and emergency signals will be required when the ability to vocally communicate is lost may be necessary in the event of a storm, natural disaster, or security situation.

25 Lock Out Tag Out

Our team does not expect to use lock out tag out procedures to inspect the existing water tank.

26 Biological Hazards

Biological hazards include water borne and food borne illnesses and parasitic infections. All food and water will be obtained from previously verified “safe” sources at the hotel and certain restaurants. Uncooked and “washed” food items such as salads and water with ice in it in restaurants should be avoided. Direct contact will be avoided at all times with any untreated water source including streams. The tap water at the hotel is treated and is safe for bathing and washing but direct ingestion should be avoided as the actual quality is unknown. Bottled water is readily available. Required vaccinations include yellow fever, typhoid, and hepatitis A.

27 Hazardous Materials

To prevent inhalation of PVC vapors and fumes, the team will wear protective masks that cover the mouth and nose area. Goggles will be worn to protect the eyes from PVC vapors, and gloves will be worn to prevent skin contact with PVC. Clean water will be available to wash any area of the body that comes in contact with PVC, and bottled water will be available to drink in any case of PVC ingestion.

28 Clearing, Grubbing, and Logging

Ladders will be used, after they have been inspected for use, to access or inspect any existing roofs.

29 Falling Objects, Punctures, Abrasions, Dust, and Noise

The team does not have the need for heavy duty apparel during the implementation phase. Pants and closed toed shoes will be mandatory packing items for construction.

30 Silica

Our team will wear protective masks in order to prevent the inhalation of silica sand dust, and good workplace hygiene will be practiced to prevent contamination of silica sand dust outside of the work area.

6.2 Emergency Response Plans

Designated Meeting Point

The designated meeting point for all team members in the event of an emergency will be the visitor's hut which is on site. A secondary offsite location will be determined once the team arrives and can better evaluate the environment.

Land Ambulance Service

Land ambulance service is not available on the island.

Air Ambulance Service

Air ambulance service is available thru ISOS.

7.0 TRAINING

Training will be provided prior to the team departing on the trip and while on site during daily task hazard review meetings.

7.1 Pre Mobilization Training

The Health and Safety Officer #1, Kammi Shah, has current First Aid and CPR Training with the National Safety Council. This certification will be renewed with the Red Cross prior to the trip. Stephen has maintained several years of certification and has extensive experience with emergency preparedness as an Eagle Scout.

The Health and Safety Officer #2, Vince Buhler, will be First Aid/ CPR Certified. Relevant certifications are listed in Attachment H. A general training and review on the following protocols will be provided prior to the teams departure:

- TH 02 Inclement Weather
- TH 03 Heat stress
- TH 05 Foot care
- TH 08 Manual lifting
- TH 09 Rough Terrain
- TH 10 House keeping
- TH 11 Structural Hazards
- TH 12 Remote Areas
- TH 13 Working Over/Near Water
- TH 14 Traffic
- TH 16 Fall Protection
- TH 18 Shoring and Trenching
- TH 26 Biological Hazards
- TH 29 Falling Objects, Punctures, Abrasions, Dust, and Noise

7.2 On Site Training

The Health and Safety Officers will hold daily safety meetings at the project site prior to the commencement of activities. All relevant hazards potentially encountered over the course of the day will be identified and management strategies will be discussed.

8.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Required Personal Protective Equipment (PPE) will include safety glasses and sturdy hiking boots. Additional PPE, which is task dependant, includes gloves and waterproof boots..

8.1 Rationale For Use

This project is for the assessment of the water problem in the community. For this reason, the **minimum** required PPE includes safety glasses and sturdy hiking boots for the anticipated hazards.

8.2 Criteria For Selection

Glasses will be ANSI certified and of construction grade. Boots will be appropriate for hiking. Waterproof Boots/Gloves will be used for data collection to protect team members from biological hazards.

8.3 Listing By Task

Rubber boots will be required if water is encountered during potholing prevent contact. See Attachment D for a detailed overview by task.

9.0 SITE CONTROL MEASURES

9.1 Exclusion Zones

Atmospheric

The team does not anticipate any atmospheric exclusion zones for this trip as we will not be working with chemicals or cutting/mixing silica based products.

Physical Zones

The team does not anticipate any physical exclusion zones for this trip as we will not be performing demolition, excavation, or overhead work tasks.

9.2 Site Hygiene

All team members will be expected to keep their personal spaces at the hotel free of clutter. Everyone will participate in grounds keeping of the site at the end of the day.

10.0 MEDICAL CONSIDERATIONS

10.1 Medications and Vaccinations

All travel team members are recommended to obtain a physical prior to departure, and are required to fill out a personal health and emergency contact form listing medical conditions, treatments, location of medications, and relevant contact information. Recommended and required vaccinations include:

- Current Tetanus
- Hep A
- Hep B
- Typhoid
- Yellow Fever
- Rabies
- Prescription for Antimalarial Medication

A post trip health assessment is recommended for all travelers 2-4 months after return from the trip. All general information regarding possible adverse health effects from the trip will be submitted to EWB-USA by the Health and Safety leads to aid in future trip preparations. Management Strategies are available in Attachment I.

10.2 Location of and person responsible for First Aid Kit(s)

At all times there will be a minimum of (1) HSO at the project site. The HSO will possess at all times the first aid kit.

10.3 Exposure/Injury/Medical Support (on site and off)

Minor injuries, such as abrasions, will result in on-site treatment by qualified first aid responders. Significant injuries will result in transportation to the nearest qualified medical clinic.

10.4 Medical Treatment Facilities (Location & Transportation)

The location of and map to the nearest medical treatment facility is identified in the preface and will be clearly posted at the site.

10.5 Incident Report

The form in Attachment J will be completed within 24 hours of any incident. The incident will be reported to the appropriate Health and Safety Committee member at the earliest possible time via telephone or email. The EWB Health and Safety Committee representative for this project is identified in Section 2.2.

11.0 POST MOBILIZATION REPORTING

11.1 System To Capture And Report Project Related Injury And Illness

Weekly or daily reports will be submitted to the EWB-USA H&S Committee representative as required until the incident is deemed closed.





11.2 Participant Signatures

HSOs will organize a briefing for EWB-USA participants about this document before departure, and this document will be available for them to read in its entirety before travel.

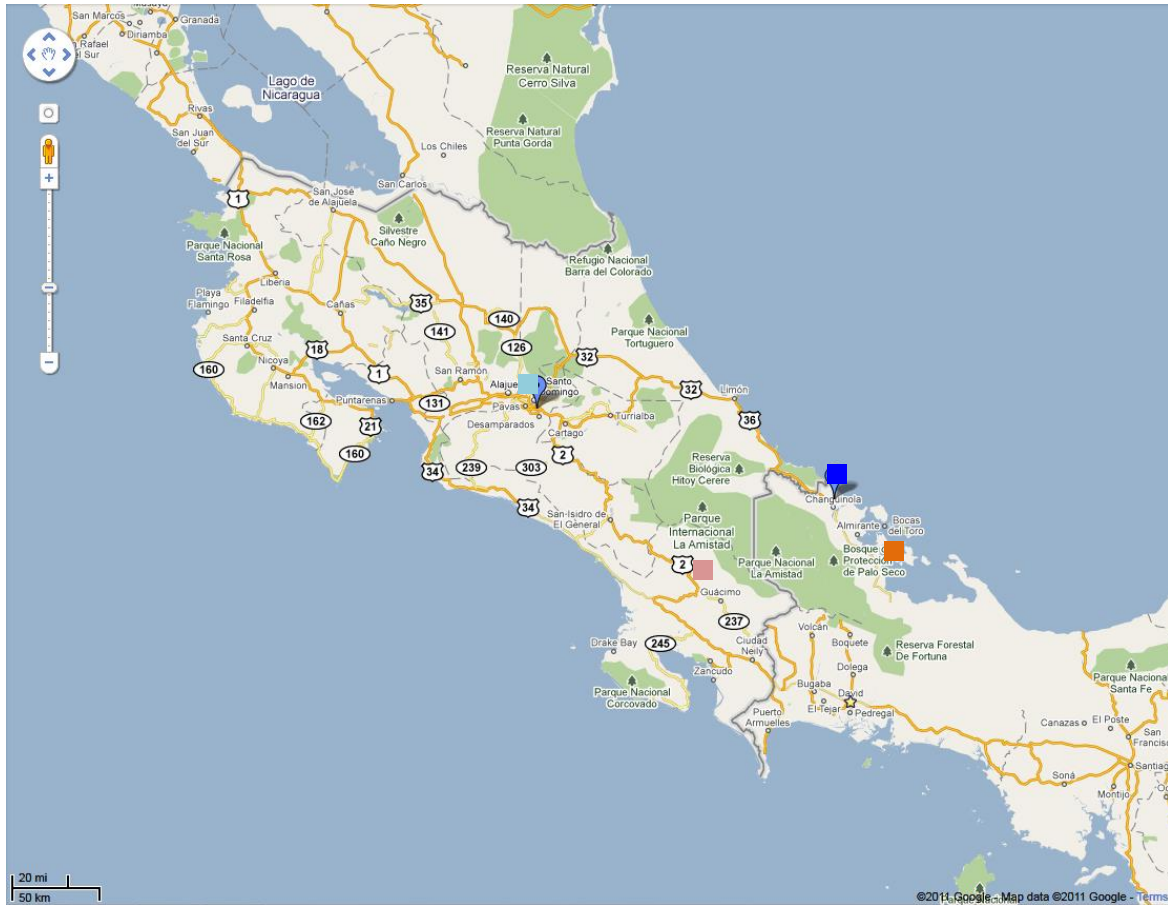
Participants are required to acknowledge that they have read, understand, and will comply with the protocols contained in this document. They will indicate their agreement in the travel waiver document submitted to EWB-USA.

ATTACHMENT A: AREA MAP

Table A-1: Area Site Coordinates

ITEM	DESCRIPTION	Lattitude	Longitude	COMMENTS
A01 	Clinical San Raphael	-	-	Clinica San Rafael Finca 12 o Ave. 17 de Abril Changuinola, Panama
A02 	Tranquilo Backpackers Hotel	9.9715557114 9224	84.071502685 54688	
A03 	Hospital Chiriqui	8.431143	-82.432528	
A04 	Project Site	9.183333	-82.11667	

Picture A-1: Area Map



ATTACHMENT B: PROJECT SITE MAP

Table B-1: Site Coordinates

	Latitude	Longitude	Altitude (ft)
Visitors' Hut	N9 12.227	W82 08.463	56
School	N9 13.230	W82 08.4238	62
Health Center	N9 13.235	W82 08.406	62
Church	N9 13.202	W82 08.369	53
Central Gazebo	N9 13.230	W82 08.444	61
Dock	N9 13.236	W82 08.503	19
Mangrove	N9 13.333	W82 08.497	0
Covered Well	N9 13.322	W82 08.466	1
Uncovered Well	N9 13.303	W82 08.478	81

Picture B-1: Project Site Coordinates



Figure 2: Aerial View of Village Superimposed with GPS Coordinates (approximate scale 1in:200 ft)

ATTACHMENT C: TASK HAZARD ANALYSES

Table C-1 titled “Site Specific Task Hazard Analysis” summarizes the tasks and the anticipated hazards associated with each activity.

Table C-1 – Site Specific Task Hazard Analysis

[illegible]

ATTACHMENT D: PERSONAL PROTECTIVE EQUIPMENT ANALYSES

Table D-1 titled “Site Assessment & Investigation PPE Analysis” summaries the tasks and the PPE associated with each activity.

Table D-1 – Site Assessment & Investigation PPE Analysis

TASK	GENERAL					FOOTWEAR			OTHER PROTECTION		
	Seat Belts	Hard Hats	Long Pants	Long Sleeve Shirt	Rain Gear	Work Boots	Rubber Boots	Closed Toed Shoes	Safety Goggles	Hearing Protection	Leather Gloves
Transport Materials	X		X		A	X	A	X	X	A	A
Assemble Stand			X		A			X	X	A	A
Install Gutters			X		A			X	X	A	A
Install First Flush/Prep Tank			X		A		X	X	X	A	A
Construct Housing			X		A	A		X	X	A	A
Biosand Filters			A					X	X		

A = As Required

X = Required

?? = HSO To Determine

ATTACHMENT E: POTENTIAL VENOMOUS SNAKES & SPIDERS

From the Armed Forces Pest Management Board Living Hazards Database

Apis mellifera scutellata

Identification

Family: Apidae

Scientific Names: *Apis scutellata*

Common Names: Africanized honey bee



Description

Look identical to typical "domesticated" European honey bees (microscopic measurement differences). Body about 1.5-2.5 cm long, dark-brown w/ yellow-brown hairs covering thorax, most of head & in bands across abdomen; wings clear & membranous. Social insects, work cooperatively in large colonies (often thousands of individuals) w/ a caste system. Large, dark compound eyes, elongated tongue-like mouthparts, carry pollen stuck among hairs of hind legs.

Habitat

When found "wild", these & other honey bees typically live in warmer to temperate climates, in large colonies (usually called hives; often built in various available somewhat "protected" cavities), w/ honey storage combs & brood chambers built of beeswax, w/ social castes.

Activity and Behavior

Diurnal, usually foraging & collecting nectar & pollen from available flowers, & various nest (hive) & brood maintenance. This subspecies is much more aggressive than typical "domesticated" (European/ Italian) subspecies, w/ >50% of workers in a colony attacking an intruder w/ slightest provocation; & will maintain attack for 1/4 mile or farther. This subspecies will forage during overcast & in light rain. Tend to "swarm" or abscond more than European subspecies does.

Venom Characteristics

Contains enzymes, peptides, histamine (causes local pain & vasodilation), & hyaluronidase (spreading factor). About 50-60% of venom's dry-weight is peptides (mainly melittin & mast-cell degranulating peptide). Peptides cause cell lysis, pain & inflammation; phospholipases (esp. A2) cause allergic reactions. This subspecies' venom is NOT more potent than European bees', but significantly more stings usually inflicted. Deaths usually due to anaphylactic shock.

Atropoides mexicanus

Identification

Family: Viperidae

Scientific Names: *Atropos mexicanus*, *Atropoides nummifer* (in part), *A. n. mexicana*, *Bothriechis nummifera* (in part), *B. n. var. notata*, *Bothriopsis affinis*, *B. mamnifera*, *B. mexicanus*, *Bothrops mexicanus*, *B. nummifera*, *B. nummifer nummifer*, *Lachesis nummifer*, *Porthidium nummifer mexicanum*, *Teleuraspis nummifer*, *Thanatophis nummifer*, *Thanatos nummifer*, *Trigonocephalus nummifer*, *Trimeresurus nummifer*, *T. n. nummifer*

Common Names: Central American jumping pitviper, mano de piedra, timbo, chehpat, jumping tommygoff, patoca, toboba, toboba chinga, brazo de piedra, chinchintor, dormilon, dormilona, mococh, otoo, tamaga, tamagas, timbo, xalpate, tunco, bajequilla, bolpach, mano de metate, cabeza de sapo, saltadora, sok nok, najak tzajin, nauyaca, pawangu tsany, ochcan

Description

Exceedingly stout, terrestrial pitviper, adults usually 50-70 cm long (max. 90+ cm). Body gray-brown to dark brown (rarely - background color yellow, cream, pale gray, or even reddish), w/ darker brown rhomboidal blotches along dorsal midline, sometimes form a zigzag pattern. Dark postocular stripe, 23-27 midbody dorsal scale rows; high, tubercular-keeled dorsal scales. Belly may be immaculate to heavily blotched w/ brown. Moveable front fangs relatively short.



Habitat

Found mainly in mesic forest, including tropical rainforest, moist, & wet forest; & lower cloud forest; sometimes in pine savannas & rocky outcroppings (includes corozo, coffee, pine & cloud forest life areas). Found at 40-1,600 m elevation from southeastern Mexico to central Panama.

Activity and Behavior

Terrestrial, mainly nocturnal, but sometimes basks in sun. Typically slow-moving & not aggressive by day. Can only strike for about 1/2 of its body length (despite its common names). This species often holds onto prey after striking (often very tenaciously). When threatened, often holds mouth very wide open as a defensive display.

Venom Characteristics

Mainly hemotoxic, w/ possible cytotoxic factors. Venom reportedly not as potent as that of other pitvipers in the same areas (e.g., *Bothrops asper*). Main envenomation symptoms usually local pain & swelling. Although a number of human envenomations by this species occur each year, human fatalities reported to have been due to this species, or closely-related species, have not been well documented.

Atropoides picadoi

Identification

Family: Viperidae

Scientific Names: Bothrops picadoi, Porthidium picadoi, Trimeresurus nummifer picadoi

Common Names: Picado's pit viper

Description

Size and coloration very similar to "A. nummifer".



Habitat

[See Atropoides nummifer](#)

Activity and Behavior

[See Atropoides nummifer](#)

Venom Characteristics

Hemotoxic.

Bothriechis lateralis

Identification

Family: Viperidae

Scientific Names: Bothrops lateralis, Lachesis lateralis

Common Names: Engl. - Side-striped palm-pitviper, Coffee palm viper; Costa Rica & Panama - lora, toboba; Nicaragua - Chocoya, lora

Description

Medium-sized, fairly slender arboreal palm pitviper, adults usually 0.5-1.0 m long; w/ a prehensile tail & 21-23 midbody dorsal scale rows. Background color usually yellowish-green to bluish-green, usually w/ dorsolateral bicolored (yellow & black) vertical bars. Adults usually lack a dark postocular stripe. Belly usually very light green to whitish.



Copyright: C.Dresler & Saint Louis Zoo

Habitat

Most commonly found coiled in vegetation over or near watercourses; reported from 850 to 2,000 m elevation. Limited to Costa Rica, Nicaragua & Panama.

Activity and Behavior

Mainly nocturnal, mainly arboreal; usually not aggressive & remain quietly coiled in vegetation, but will strike if brushed against or touched. Ovoviviparous w/ 6-17 young in litters reported for captured specimens. Preys mainly on small rodents, frogs, birds, & even (rarely) bats.

Venom Characteristics

Mainly hemotoxic w/ strong proteolytic factors. Sometimes bites & envenomates humans, but typical symptoms usually limited to localized pain, swelling, redness, & occasionally dizziness, headache, photosensitivity, & difficulty breathing. Rare reports of human fatalities due to bites by this species have not yet been confirmed.

Bothriechis nigroviridis

Identification

Family: Viperidae

Scientific Names: *Bothrops marchi*, *B. nigroviridis*, *B. n. nigroviridis*, *B. rowleyi*, *Trimeresurus nigroviridis*

Common Names: Engl. - Black-speckled palm-pitviper; Costa Rica - lora, sese, toboba de arbol, vibora de arbol

Description

Medium-sized, arboreal prehensile-tailed pitviper, adults usually <60 cm long (max. 93 cm); 17-21 midbody dorsal scale rows; body usually emerald-green to yellowish-green, strongly mottled w/ black; a distinct black postocular line from the eye to the corner of the mouth. Belly yellowish-green lightly mottled w/ black. Juveniles have black tail tip.



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Habitat

Found mainly in lower montane wet forest, cloud forest, & high montane forest; most common in undisturbed habitats. Found at 1,100-2,400 m elevation or higher. Limited to both slopes of the central cordillera of Costa Rica & western Panama.

Activity and Behavior

Mainly nocturnal, mainly arboreal; usually not aggressive & remains quietly coiled in vegetation, but will strike if disturbed. Ovoviviparous w/ usually 4-8 young/ litter. Preys mainly on small mammals, & sometimes frogs or birds.

Venom Characteristics

Mainly hemotoxic, w/ possible cytotoxic & neurotoxic factors. Has been implicated in human fatalities; envenomation reportedly results in intense pain, nausea, & asphyxia. Currently no specific antivenoms to this species.

Bothriechis schlegelii

Identification

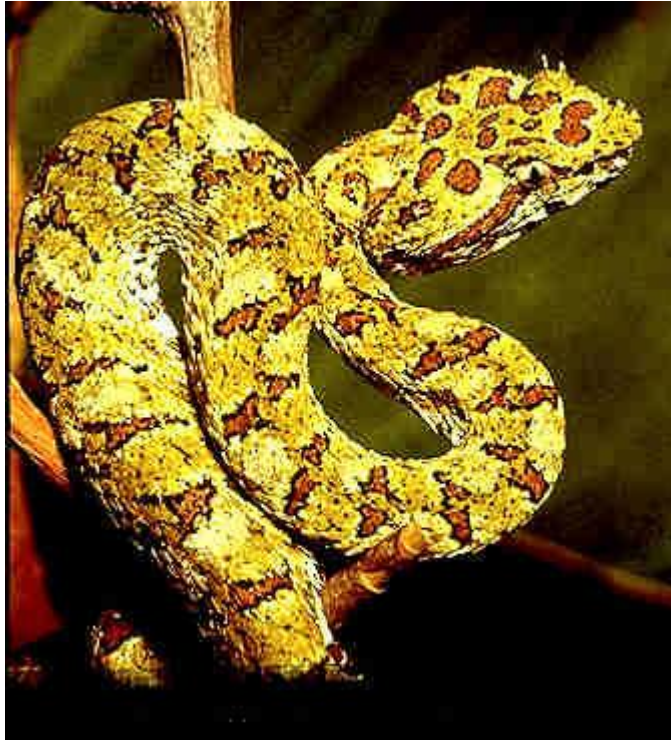
Family: Viperidae

Scientific Names: *Bothriechis supraciliaris*, *Bothrops nigroadspersus*, *B. schlegelii*, *B. supraciliaris*, *Lachesis nitidus*, *L. schlegelii*, *Thanatophis torvus*, *Trigonocephalus schlegelii*, *Trimeresurus schlegelii*

Common Names: Eyelash palm-pitviper, Green Tommygoff, chaj bolay, vibora del arbol

Description

Small, moderately slender, arboreal pitviper, w/ a prehensile tail, adults usually <60 cm long. Background color & markings extremely variable. Most specimens w/ body green, olive green, or gray-green, finely suffused w/ brownish to reddish-brown speckling. One color phase is yellowish w/ many irregular reddish blotches dorsally, often w/ a lot of speckling of smaller orangish spots, & belly usually almost solid paler yellow.



Habitat

Found most commonly in tropical moist forest, wet subtropical forest (cloud forest), & montane wet forest. Usually found in shrubs, trees, & vine tangles close to rivers & streams. Found at up to 1,000 m elevation in Mexico & Guatemala, & up to 1,500 m in other parts of its range.

Activity and Behavior

Primarily arboreal & diurnal. Characteristically coils w/ mouth wide open when disturbed. Usually nonaggressive, but reportedly can be quick to bite when disturbed or just brushed against. Ovoviviparous w/ reports of 6-20 young/ litter; usually breed readily in captivity. Prey mainly on available arboreal lizards, frogs, & small mammals (may also hunt these same prey on the ground).

Venom Characteristics

Mainly hemotoxic, but w/ strongly myotoxic factors. A few humans bitten & envenomated by this species each year within its range, but fatalities (mainly of smaller children) reportedly rare. Typical serious envenomation symptoms include: local intense pain & swelling, w/ mild but slowly spreading tissue necrosis, dizziness, nausea, & difficulty breathing. No specific antivenom currently produced against this species.

Bothrops asper

Identification

Family: Viperidae

Scientific Names: *Bothrops atrox asper*, *B. a. septentrionalis*, *B. a. xanthogrammus*, *Bothrops xanthogrammus*, *Lachesis xanthogrammus*, *Trigonocephalus asper*, *T. xanthogrammus*

Common Names: Terciopelo, barba amarilla, cantil, cantil Boca dorado, cantil devanador, yellow-jaw tommygoff, equis, equis negra, cascabelle, toboba rabo amarilla, cuatronarices, pelo de gato, nauyaca, taya equis, fer-de-lance (plus many more slight local variations of these; >100 variant common names)

Description

Large, moderately slender, lance-headed, adults usually 1.2-1.8 m long (max. 3.05 m); body colors & patterns highly variable, but many specimens are light brown to olive-grey & appear to have a series of dark X's down their back, 23-33 (usually 25-29) midbody dorsal scale rows. Head almost no dorsal markings, postorbital stripe present, snout markedly pointed, underside of head plain pale yellow. Venter pale yellow, cream or whitish-gray.



Habitat

Found mainly in lowlands & coastal plains, from sea level to 1,300 m elevation, but may reach 2,700 m in Andes areas. Most common in tropical rainforest & tropical evergreen forest, from southeastern Mexico through Central America to Ecuador & Venezuela (to Trinidad). Seldom found in very dry habitats.

Activity and Behavior

Mainly nocturnal & terrestrial, but may climb bushes & low trees. Often seeks prey near human habitations & in or near cultivated areas. Excitable & unpredictable if disturbed; easily provoked to strike. Moves very rapidly & defends itself aggressively. Ovoviviparous w/ 25-70 (avg. 40) young/ litter. Young eat arthropods & other exothermic prey until large enough to swallow small rodents; then they shift to warm-blooded (endothermic) prey, & often use their tail to lure prey.

Venom Characteristics

Has a large supply of potent mainly hemotoxic venom w/ cytotoxic factors; envenomation can cause systemic internal bleeding & serious local tissue destruction. Causes immediate burning pain, edema, local hemorrhage, discoloration, necrosis, can cause wide-spread hemorrhage (at multiple sites & intracranial), coagulopathy, severe hypotension, renal failure & shock. Causes more human deaths than any other pitviper species in the Western Hemisphere.

Bothrops punctatus

Identification

Family: Viperidae

Scientific Names: Bothrops leptura, B. monticelli, B. monticelii, B. punctata, B. punctatus punctatus, Lachesis monticellii, L. punctata, Thanatophis montanus, Thanatos montanus

Common Names: Chocoan lancehead, cuatronarices, dormilona, equis orito, flecha, mapanare rabiseca, pelo de gato, rabiseca, rabo de chucha

Description

Large, semi-arboreal, lancehead, adults often >100 cm long (max. about 150 cm); body pale brown to greenish-tan, w/ pale-edged dark brown blotches along the sides, 25-29 midbody dorsal scale rows. Belly usually cream to pale tan w/ brown spots. Has a long, rounded tail spine sometimes turned up at tip.

Habitat

Found mainly in subtropical moist & wet forest, tropical moist & wet forest, & montane wet forest, in the Chaco region of Columbia, eastern Panama & Ecuador. Reported from near sea level to 2,300 m elevation.

Activity and Behavior

Not well known, but semi-arboreal & probably mainly nocturnal, w/ activity patterns & behavior similar to the closely-related species, "B. atrox".

Venom Characteristics

Not well known, but probably hemotoxic w/ cytotoxic factors, like most other Bothrops species. For generalized symptoms of envenomation, see the closely-related species, "B. asper".

Centruroides spp.

Identification

Family: Buthidae

Scientific Names: *Scorpio* spp. (in part), *Centrurus* spp. (in part), *Rhopalurus* spp. (in part). [Note: There are currently 50+ named species recognized in this genus, but only about 6 spp. are of medical importance (see medically important spp. addressed separately, individually).]

Common Names: Bark scorpions, house scorpions, common scorpions, "sculptured" scorpions

Description

Medium to large-sized, moderately-slender scorpions, adults usually 50-80 mm long (max. 110+ mm; varies by spp.). Body usually pale yellowish to medium-brown (some spp. dark brown), w/ varying patterns of darker gray or brownish dorsal stripes or blotches. Tail (postabdomen) rather slender, pincers rather slender & not very robust (= usually thin), legs usually pale yellow-brown. Most spp. are sexually dimorphic w/ thinner, longer males & stouter, shorter females.



Habitat

Found mainly in warm, relatively dry areas, usually w/ sandy soil & lots of loose bark (e.g. on or under logs), leaves, surface debris or crevices in which to hide. Most spp. limited to arid or semi-arid regions of the southwestern U.S., Mexico, Central America, the Antilles, &/or northern South America.

Activity and Behavior

Nocturnal, usually hide in crevices or under bark or debris by day, often come into houses. Prey mainly on available insects & other arthropods. Avoid humans unless cornered, stepped on or

brushed against (usually while hunting at night or if trapped in clothing being donned), then sting quickly & try to escape. Ovoviviparous, >20 per "litter," young may ride on mother's back until 2nd instar. Whole body fluoresces (usually yellowish-green) in certain wavelengths of UV light.

Venom Characteristics

Mainly neurotoxic, w/ cytotoxic factors in some spp. Potency varies w/ different spp. A sting (envenomation) usually causes local pain, swelling, redness & discomfort (may be delayed 1-24 hrs.); sometimes spreads & includes numbness. Systemic effects may include muscle twitching, nausea, rapid heartbeat, slurred speech, sweating, coma & death (for some spp.). Cardiac failure reportedly causes most human deaths. Venom effects more severe in children than adults.

Cerrophidion godmani

Identification

Family: Viperidae

Scientific Names: Bothrops godmani, Bothriechis godmani, B. trianguligera, Lachesis godmani, Porthidium godmani, Trimeresurus godmani

Common Names: Engl.: Godman's montane pitviper, Ger.: Godman-Berggrubenotter, Costa Ric: borot kabi, dudaban, toboba de altura, Guatemala: cantil frijolillo, sheta, tamagas, Honduras: timbo chingo, tamagas cafe, Mexico: nauyaca del frio, Nicaragua: toboa oscura, toboita

Description

Small, moderately-stout, terrestrial pitviper, adults usually 46-50 cm long (max. 82 cm); colors & patterns quite variable, body usually brown, reddish-brown, grayish-brown to nearly orange; dark brown blotches often merge to form a zigzag dorsal stripe, 21 midbody dorsal scale rows, dark postorbital stripe, venter pale yellow to orange w/ no mottling, darker toward tail.



Habitat

Found in a wide range of low montane wet forest & cloud forest, lower montane dry forest, largely pin oak; & high montane forest & meadow. Occurs at 1,400-3,491 m elevation. Limited to higher elevations of parts of southeastern Mexico & Central America.

Activity and Behavior

Mainly terrestrial, & mainly diurnal, often seen crawling or coiled along forest paths. May rarely climb up onto a log or stump, but usually found beside or under logs, rocks, or other large pieces of debris. Can move very rapidly, usually avoids humans, but will strike quickly if disturbed.

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Ovoviviparous w/ 2-12 young/ litter observed for captured specimens. Prey on a variety of available arthropods, small mammals, reptiles (mainly lizards), salamanders, & sometimes birds.

Venom Characteristics

Not well known. Mainly hemotoxic, w/ potent myotoxic & proteolytic factors. Symptoms of envenomation of humans may include: intense local pain, extensive local swelling (may involve whole limb), widespread itching, fever, headache, nausea & light-headedness (to the point of collapse in one observed case). Few bites & no fatalities of humans reported for this species.

Crotalus spp.

Identification

Family: Viperidae

Scientific Names: Aploaspis, Aechmophrys, Caudisona, Crotalinus, Crotalophorus, Crotalurus, Haploaspis, Paracrotalus, Urocrotalon, Uropsophus [Note: This genus includes at least 30 currently named spp., & is most diverse on the Mexican plateau & surrounding mountains.]

Common Names: Rattlesnakes, pitvipers ("new world"), vipers

Description

Small to large, mainly terrestrial, fairly stout-bodied pitvipers, w/ multiple hollow "scales" (at least 1) at the tail tip, usually retained through molting & "rattle" if tail is shaken. Body color may be brown, gray, green, red, pink or yellow, usually w/ dorsal pattern of darker rhombs, blotches or spots (varies by spp.), & belly lighter w/ darker spots or blotches, tail usually w/ multiple alternate dark & light rings (blend well w/ usual surroundings), w/ 2 folding, upper front fangs.

Habitat

Found in a wide range of habitats (varies by spp.), but most are found in brushy edges of open areas of forests or margins of dry, or seasonally dry (often desert), & often rocky areas. Found from below sea level to 4,500+ m elevation (varies w/ spp., see individual spp. listed).

Activity and Behavior

Most spp. mainly terrestrial & mainly nocturnal, but varies w/ physical conditions of typical habitat (esp. temperatures), & sometimes w/ season of the year. Most spp. wait in typical sites to ambush prey (usually small mammals, lizards etc.; & varies by spp.). All are ovoviviparous, litter numbers vary w/ spp. & female's body size.

Venom Characteristics

Most spp. have mainly hemotoxic venom, often w/ additional tissue-necrotic factors (& sometimes neurotoxic or cardiotoxic factors). Many species can & do cause serious human envenomations & deaths each year (varies by individual spp.).

Lachesis acrochorda

Identification

Family: Viperidae

Scientific Names: Bothrops arachorda, B. verrugosa, Lachesis calcaratus, L. muta (in part)

Common Names: Chocoan Bushmaster, verrugosa, diamante, mapana rayo, martiguaja, montuno, pudridora, verrugosa del Choco, guacama

Description

Very large, relatively slender, big-headed terrestrial pitviper, adults usually 1.8-2.3 m long (max. 3+ m); w/ pronounced mid-dorsal ridge (esp. front 1/4 of body), head lanceolate, reddish or brown w/ dark spots, snout not elevated; body yellowish-brown to reddish-tan w/ 23-31 dark dorsal rhombs, 31-39 (usually 35) midbody dorsal scale rows, belly white or cream w/ small darker blotches along sides.

Habitat

Found mainly in tropical wet & moist forests w/ rainfall of 2.5-6.0 m/year; found on both Atlantic & pacific slopes of eastern Panama & western Columbia, then south along the pacific slope into northwestern Ecuador. Lives from near sea level to about 1,600 m elevation, most records are from 500-1,000 m elevation.

Activity and Behavior

Mainly nocturnal, inactive during day, generally nonaggressive, but males often active & engage in ritual combat in the daytime during mating season; Usually hide under logs, in rodent burrows or rock crevices. Feed mainly on small mammals or birds. Oviparous, females often remain coiled around or on their clutch (often up to 10 eggs).

Venom Characteristics

Venom includes factors that are proteolytic, hemorrhagic, myotoxic, clotting inhibitors & possibly neurotoxic. The sheer volume which can potentially be injected in one bite make these snakes (esp. adults) very dangerous. All 4 currently recognized Lachesis species combined probably cause >100 human deaths/ year in Central & South America.

Lachesis muta

Identification

Family: Viperidae

Scientific Names: Bothrops surucucu, Coluber alecto, C. crotalinus, Cophius crotalinus, Craspedocephalus crotalinus, Crotalus mutus, Lachesis ater, Lachesis muta muta, L. m. rhombeata, L. m. noctivaga, L. mutus, L. rhombeata, Lachopsis rhombeata, Scytale ammodytes, S. catenata, S. catenatus, Trionocephalus ammodytes, T. brasiliensis, T. crotalinus, T. rhombeatus

Common Names: Bushmaster, South American Bushmaster, cascabela muda, cascabel pua, cuanira, diamonte, shuchupe, matabuey, mapepire, parariapu, surucucu, urukuku, verrugosa [PLUS more than 50 additional local common names]

Description

Very large, rather slender, big-headed terrestrial pitviper, adults usually 2.0-3.0 m long (max. 3.6+ m); longest poisonous snake in the Americas. Prominent mid-dorsal ridge, esp. on the front 1/2 of body. Body reddish-brown, yellowish-tan, or pinkish-tan, w/ dark brown or black diamond-shaped dorsal blotches (often edged w/yellow or cream). Belly white or ivory, head lanceolate; tan, brown or reddish-brown w/ dark postocular stripe, & dark speckling/ spots.



Habitat

Mainly found in tropical rainforests & lower montane wet forests that get 2.0-4.0 m annual rainfall; may occur along rivers in drier regions. Often found near large, buttressed trees or fallen logs, from near sea level up to 1,000 m elevation.

Activity and Behavior

Mainly terrestrial & nocturnal, most likely to respond quickly to disturbance near dawn (often inflating neck & vibrating tail rapidly). The southeastern Costa Rican population reportedly is highly aggressive when disturbed. Oviparous, w/ 5-18 eggs/ clutch. Prey mainly on small mammals. Large adult captive specimens reportedly occasionally emit a long "whistling" sound.

Venom Characteristics

Has potent proteolysins; envenomation causes intense pain, swelling, & necrosis (often extensive) at the bite site, sometimes followed by gangrene. Bites from this species in Panama & Atlantic lowlands of Costa Rica have historically had a high case fatality rate.

Lachesis stenophrys

Identification

Family: Viperidae

Scientific Names: Bothrops acrocorpus, Lachesis acrocorda (in part), L. muta stenophrys

Common Names: Central American Bushmaster, bushmaster, boccaraca de javillo, cascabel muda, cascabela muda, ija, mapana, matabuey, mazacuata, toboa real, verrugosa

Description

Very large, rather slender, big-headed terrestrial pitviper, adults usually 2.0-2.5 m long (max. 3.48 m); pronounced mid-dorsal ridge (esp. on front 1/4 of body), head lanceolate, reddish-tan or brown, sometimes w/ sparse black speckling; body grayish-yellow, dull tan, yellowish-tan, or reddish-brown, w/ 23-29 dorsal rhombs w/ darker edges, 33-38 (usually 35) midbody dorsal scale rows, belly white or cream w/ irregular dark clumps or mottling on posterior 1/4 of body.



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Habitat

Found mainly in tropical rainforest & lower montane wet forest w/ rainfall of 2.0-4.0 m/year, also along streams in drier sites, usually on steep hillsides, of primary forest, sheltering under fallen trees; in the Atlantic lowlands from sea level to about 1,000 m elevation in Nicaragua, Costa Rica & Panama.

Activity and Behavior

Mainly nocturnal, mainly terrestrial, generally not aggressive (males are irritable & engage in ritual combat in daytime during mating season). Usually hide under fallen trees in daytime, prey mainly on small mammals (sometimes birds), oviparous (clutch size not reported).

Venom Characteristics

Highly potent proteolytic, hemorrhagic, myotoxic, clotting & possibly even neurotoxic factors present. Human envenomations fairly frequent, often quickly fatal; symptoms of even limited envenomation (by even young specimens) often include immediate pain, rapidly progressive swelling & numbness, rapid pulse, shock, vomiting, diarrhea, stabbing muscle pains, & respiratory distress.

Latrodectus mactans

Identification

Family: Theridiidae

Scientific Names: *Aranea mactans*, *Latrodectus albomaculatus*, *L. formidabilis*, *L. insularis*, *L. i. lunulifer*, *L. intersector*, *L. mactans mexicanus*, *L. m. texanus*, *L. perfidus*, *L. sagittifer*, *Tetragnatha zorilla*, *Theridion lineatum*, *T. lineamentum*, *T. verecundum* [Note: This is one of the 2 most geographically wide-spread & best known of at least 31 currently valid species in this genus.]

Common Names: Black Widow Spider, Southern Black Widow, red-back spider, jockey spider, Katipo, viuda negra, chiranthahua, arana brava, casampulga, la coya, arana naranja

Description

Medium-sized cobweb spider, females' body (cephalothorax + abdomen) usually 10-15 mm long, satiny dark-brown to black w/ reddish "hourglass" mark on posterior ventral abdomen, often w/ a reddish spot on dorsal abdomen just above its tip. Female abdomen rounded & globular. Males much smaller, rather slender w/ relatively long legs. Males & young often w/ varying pattern of many stripes or blotches of red, white & brown on body.



Habitat

Most often found hanging in typical "cobwebs" in upper corners of basements, crawl spaces, outbuildings, & under seats of outdoor privies, usually near garbage or debris, wherever insect prey is abundant. Geographically wide spread. Found in southern U.S. (New York to northern California & southward), several Caribbean islands, Mexico, & Central & parts of South America.

Activity and Behavior

Mainly nocturnal, hangs in web awaiting prey, usually tries to get away from large animals & people, but will often aggressively defend its egg clusters (sacs) which it has hung in its web. Feeds on nearly any kind of insect or arthropod which gets caught in its web. Males are not always eaten after mating w/ a female, usually only if female has not fed recently, but he is often "biologically spent" & dies soon afterward anyway.

Venom Characteristics

Mainly neurotoxic (presynaptic sites). Bite usually like a pinprick, often not felt until 15 min. later, then pain may be locally intense. Severe envenomation causes symptoms like spreading intense pain, lots of sweating, fast & shallow breathing, eyelids swollen, alternating excess & lack of salivation, cardiac rate & rhythm changes, rigid abdominal muscles, sight impaired (seeing "light" spots). Human fatalities rare (<5%, untreated) & often due to additional medical problems.

Loxosceles laeta

Identification

Family: Loxoscelidae

Scientific Names: Scytodes laeta, Scytodes nigella, Scytodes rufipes

Common Names: Brown spider (South American), (Chilean) violin spider, Chilean Recluse, Chilean fiddle-backed spider

Description

Adult female's body usually 12 mm long (up to 15 mm), male usually smaller. Carapace & appendages bright yellowish to orange or reddish-brown. Abdomen grey to white, covered w/ black hairs, giving it a dusky appearance. Eyes relatively smaller than those of the "L. reclusa group," 3 diads in a strongly recurved row (along the base of the "fiddle-shaped" dorsal mark), 4th pair of legs distinctly longer than any other pair.



Habitat

Mainly found in fairly dry (sometimes in seasonally moist) sites, often transported in commerce & found in drier, less actively occupied parts of humans' structures (e.g., in edges of garages or closet, or among & under stored boxes or furniture). Original natural distribution was probably limited to northwestern South America, but now very wide spread (usually established in open dry, heated buildings in temperate regions). Specimens reported from Australia & Finland.

Activity and Behavior

Mainly nocturnal, usually spins irregular web in corners (when in buildings) or in cracks under edges of stones logs, blocks, etc. Usually remains in contact w/ web except to forage out short distances to catch prey insects or arthropods which happen nearby.

Venom Characteristics

Contains potent cytotoxic, hemotoxic, & neurotoxic factors (& hyaluronidase). Envenomation usually causes at least some local tissue necrosis around bite site, well documented to cause serious spreading human tissue destruction (necrosis), & occasional human deaths.

Micrurus alleni

Identification

Family: Elapidae

Scientific Names: *Micrurus alleni alleni*, *M. a. richardi*, *M. a. yatesi*, *M. nigrocinctus alleni*, *M. n. yatesi*, *M. yatesi*

Common Names: Allen's coral snake, coral, coralillo, coral cabeza flecha, coral de agua, coral macho

Description

Medium-sized, tricolored coral snake, adults usually 0.6-0.8 m long (max. 1.3 m). Black cap on top of head extends rearward, nearly bisecting a broad yellow crossband; body usually w/ alternating broad dull red & black rings separated by much narrower yellow or white rings (rybyr). Color patterns differ between some Atlantic versant vs. Pacific versant populations.



Habitat

Found most commonly in lowland rainforest & subtropical wet forest, occasionally along rivers in drier areas. Mainly found below 1,000 m; but has been found up to 2,000 m elevation in Costa Rica.

Activity and Behavior

A secretive, but a fairly common snake (*M. alleni*) is responsible for many coral snakebites in Central America). Sometimes found close to human dwellings. Coral snakes usually are nonaggressive; most bites occur during attempts to capture the snake.

Venom Characteristics

Specific data are lacking; coral snake venoms primarily are neurotoxic.

Micrurus ancoralis

Identification

Family: Elapidae

Scientific Names: *Elaps marcgravii* var. *ancoralis*, *E. ancoralis*, *E. rosenbergi*, *Micrurus ancoralis ancoralis*, *M. a. jani*

Common Names: Regal coral snake, coral, coralillo, Gargantilla, coral rey

Description

Medium-sized tricolored coral, adults usually 70-90 cm long (max. 151 cm); most of head red (*M. ancoralis jani* w/ a distinct oblique white marking on each side of neck), body w/ a series of broad red rings (often heavily stippled w/ black in *M. a. ancoralis*) alternating w/ 12-24 triads (bwbwb) on body & 1-2 more on tail. Individual white rings may often (each) be wider along flanks & may run at an slightly oblique angle.



Habitat

Found mainly in tropical rainforest & lower montane wet forest usually at <1,500 m elevation; but reported up to 2,300 m in Colombia. Probably limited to Pacific lowland of eastern Panama, western Colombia, southern Ecuador & far northwestern Peru.

Activity and Behavior

Mainly nocturnal & terrestrial (semi-burrowing). Not well known. Coral snakes usually are nonaggressive. Oviparous w/ clutch size not reported (but probably <10 eggs/ clutch). This species eat mainly available other snakes, lizards, & frogs, & (less often) invertebrates.

Venom Characteristics

Most coral snakes have highly potent neurotoxic venom in glands located in the upper jaw, which can be injected through grooved, fixed, upper front fangs. Due to their small mouths, most coral snakes bites to humans usually occur on a finger or toe. Bites usually occur during attempts to catch the snake

Micrurus clarki

Identification

Family: Elapidae

Scientific Names: *Micrurus clarki*,

Common Names: Clark's coral snake, coral, coralillo, coral macho, gargantilla

Description

Small to medium-sized coral snake, adults usually 50-60 cm long (max. 90 cm); Top of head black; posterior yellow rings narrow mid-dorsally (some incomplete). Body pattern of very broad red rings (usually including some black pigment) separated by 13-20 broad black rings narrowly bordered by yellow or cream bands. Tail has 5-9 black rings.



Habitat

Primarily found in rain forest; found along river banks in drier areas transitional between tropical wet & tropical dry forest. Occurs up to 900 m (usually <500 m) elevation, in Pacific lowlands of extreme southeastern Costa Rica, Panama & western Colombia.

Activity and Behavior

Not much known for this species, but coral snakes are usually mainly nocturnal, & mainly terrestrial (or burrowing). They usually are nonaggressive; most bites occur during attempts to capture the snake. They are usually oviparous w/ <15 eggs/ clutch) & mainly eat available lizards, other snakes, frogs, or invertebrates.

Venom Characteristics

Not much known for this species, but coral snake have mainly highly potent neurotoxic venom, injected through grooved, fixed upper front fangs. Due to the small size of their mouth, coral snakes bites to humans usually occur on fingers, toes, or webbing between them.

Micrurus dissoleucus

Identification

Family: Elapidae

Scientific Names: *Elaps dissoleucus*, *E. gravenhorsti*, *E. hollandi*, *E. marcgravi* var. *gravenhorsti*, *E. melanogenys*, *Micrurus dissoleucus dissoleucus*, *M. d. dunni*, *M. d. melanogenys*, *M. d. meridensis*, *M. d. nigrirostris*, *M. dunni*, *M. hollandi*, *M. meridensis*

Common Names: Pygmy coral snake, candelilla, candelilla barranquillera, candelilla panamena, candelilla santamartense, candelilla venezolana, coral, coralillo, coralito, coral comun, coral llanera, gargantilla

Description

Small coral snake, adults usually 28-40 cm long (max. 65 cm). Head black, w/ a white ring just behind the eyes. Neck red. Body w/ broad red rings separated by a series of 6-11 triads w/ 3 black & 2 white rings (rbwbwbr), middle black ring of each set usually somewhat broader. Both white & red dorsal scales often edged w/ black. Tail short, stout, w/ <2 triads & black-tipped.



Habitat

Mainly found in tropical dry forest, deciduous forest, coastal scrub, lower montane dry & humid forests, llanos, & savannah (mainly semi-arid or seasonally dry areas). Found mainly below 500 m elevation. Reported from central Panama east into the Choco region, the Caribbean coastal region, lower Magdalena Valley & north-central Colombia, & extends into northern Venezuela.

Activity and Behavior

Not well known. Probably mainly nocturnal, terrestrial (may also burrow in loose soil or leaf litter) & not aggressive toward humans. Apparently abundant throughout its range & often seen around human habitations. Reportedly eats available local lizards, invertebrates & other small snakes, & is oviparous w/ small clutch sizes (not reported, but likely <12 eggs).

Venom Characteristics

Not well known. Most coral snakes have highly potent, mainly neurotoxic venom, which can be injected through grooved fixed upper front fangs. Due to the small size of their mouth, coral snake bites of humans usually occur on a finger, toe, or webbing between them & usually during an attempt to catch the snake.

Micrurus dumerilii

Identification

Family: Elapidae

Scientific Names: *Elaps columbianus*, *E. dumerilii*, *E. marcgravi* (in part), *Micrurus antioquiensis*, *M. carinicauda*, *M. c. columbianus*, *M. c. dumerilii*, *Micrurus carinicaudus antioquiensis*, *M. c. transandinus*, *M. carollinus dumerilii*, *Micrurus dumerilii antioquiensis*, *M. d. carinicaudus*, *M. d. columbianus*, *M. d. dumerilii*, *M. d. transandinus*, *M. d. venezuelensis*, *M. transandinus*

Common Names: Dumeril's coral snake, coral, coralilla

Description

Medium-sized tri-colored coral, adults usually 50-70 cm long (max. 94.8 cm); Body pattern variable; usually w/ very broad red rings separated by a series of 10-27 single fairly broad black rings narrowly bordered by yellow (rybyr) or up to 14 triads (ybybyby). In some specimens, red bands are much duller, w/ most red scaled black at tip, & appear "dusky," yellow bands may be so pale they are almost white. Tail w/ 4-10 black rings alternating w/ yellow.



Habitat

Found mainly in lower montane wet forest, tropical rainforest, tropical dry forest, & thorn forest; often found near rivers in less humid areas. Mainly below 600 m elevation, but has been reported up to 2,150 m in Colombia.

Activity and Behavior

Not much known. Probably mainly nocturnal & terrestrial (maybe semi-fossorial). Coral snakes usually are nonaggressive, oviparous (typically <15 eggs/ clutch), & eat locally available lizards, invertebrates & other small snakes.

Venom Characteristics

Not well known, but probably potent, mainly neurotoxic venom, which is injected through a pair of grooved, fixed upper front fangs. Due to the small size of their mouths, coral snakes' bites to humans usually occur on a toe or finger, & usually during an attempt to catch the snake. This species reportedly inflicts many bites on humans annually within its range. No well-documented human fatalities, so far.

Micrurus mipartitus

Identification

Family: Elapidae

Scientific Names: *Elaps aequicinctus*, *E. anomalus*, *E. calamus*, *E. decipiens*, *E. decussatus*, *E. fraseri*, *E. mentalis*, *E. microps*, *E. mipartitus*, *E. semipartitus*, *Micrurus anomalus*, *Micrurus mipartitus anomalus*, *M. m. decussatus*, *M. m. mipartitus*, *M. m. semipartitus*, *M. m. popayanensis*, *M. m. rozei*

Common Names: Red-tailed coral snake, coral, coralillo, gargantilla, coral rabo de aji, cabeza de choco, candelilla, coral cabeza de choco, metagato, mataganado, carol montanera, coral rabo de candela

Description

Medium to large, slender, 2-colored coral snake (w/ a reddish ring on its head & 2-5 on its tail), adults usually 60-80 cm long (max. 120 cm); snout usually black; remainder of the head bright orange/red. Body pattern consists of alternating pale (may be white, cream, pink, or red) & 34-84 black rings. Pale rings usually narrower on dorsum, black rings usually narrower on belly. Tail usually w/ 1-9 black rings alternating w/ 2-8 red-orange rings.



Habitat

Found mainly in lower montane wet forest, cloud forest, & secondary areas, including coffee groves. Occurs at up to 2,400 m elevation. Occupies the Darien region of Panama, Pacific lowlands of Colombia (including Isla Gorgona), & the Cordilleras Occidental of Ecuador.

Activity and Behavior

Mainly nocturnal & terrestrial (semi-fossorial), but often active during the day & often found around human habitation & agricultural sites. Most species of coral snakes are not aggressive,

but this species vigorously defends itself if disturbed. Oviparous (clutch size not stated) & usually preys on available other snakes, lizards & invertebrates.

Venom Characteristics

This species has potent, mainly neurotoxic venom which can be injected through grooved, upper, fixed front fangs. Due to their small mouths, coral snakes usually bite humans on a finger or toe; & most such bites occur during attempts to catch or molest the snake. This species is a major cause of bites & envenomation within its range. It causes many human deaths.

Micrurus multifasciatus

Identification

Family: Elapidae

Scientific Names: *Elaps hertwigi*, *E. multifasciatus*, *Micrurus mipartitus* (in part), *M. m. hertwigi*, *M. m. multifasciatus*, *M. multifasciatus hertwigi*, *M. m. multifasciatus*

Common Names: Many-banded coral snake, coral, coralilla, coral macho, gargantilla

Description

This is a long, slender 2-colored (sometimes 3-colored) coral snake, adults usually 75-90 cm long (max. 120 cm). Snout is black & the black pigment includes most or all of the body. Body color pattern varies. Pale rings on body may also be red, pink, cream or white w/ a few black flecks. Usually 40-73 black body rings. Tail w/ 2-5 black dorsal crossbands, & underside red or pink. Some specimens may be bicolored black-&-white, others black-&-orange, some are 3-colored black-white-&-orange.

Habitat

Found mainly in lowland moist & wet forests (rainforest), subtropical wet forest, & lower montane wet forest. In northwestern Costa Rica, this snake may be found in tropical dry forest. Limited to Nicaragua, Costa Rica, & Panama; from near sea level to 1,500 m elevation.

Activity and Behavior

Mainly terrestrial (also burrows in loose soil or accumulated litter). Mainly diurnal, & most active during early morning & late afternoon. Although most species of coral snakes are not very aggressive, this species is reported to be nervous & will bite readily if disturbed. Oviparous & preys on locally available other snakes, lizards, frogs & invertebrates.

Venom Characteristics

Not well known, but probably has mainly potent neurotoxic venom which can be injected through a pair of grooved, fixed, upper front fangs. Due to the small size of their mouth, coral snakes' bites to humans usually occur on a finger or toe, & usually during attempts by the victim to catch or molest the snake.

Micrurus nigrocinctus

Identification

Family: Elapidae

Scientific Names: *Elaps divaricatus*, *E. fulvius*, *E. melanocephalus*, *E. nigrocinctus*, *Micrurus nigrocinctus babaspul*, *M. n. coibensis*, *M. n. divaricatus*, *M. n. mosquitensis*, *M. n. nigrocinctus*, *M. n. ovandoensis*, *M. n. ruatanus*, *M. n. wagneri*, *M. n. yatesi*, *M. n. zunilensis*, *Micrurus pacheoi*

Common Names: Central American coral snake, coral, Coral Centroamericana, coralillo, gargantilla, salviara, limlim, babaspul, coral macho

Description

Medium-sized 3-colored coral snake, adults usually 60-75 cm long (max. 115 cm). Quite variable; may be 2- or 3-colored. Snout black, usually w/ a yellow ring (red in bicolored specimens) of variable width on head at about the midpoint. Body pattern usually fairly broad red rings separated by much narrower sets of yellow-black-yellow rings (rybyr). Usually w/ 10-24 black rings on body, & 3-8 more on tail.



Habitat

Found mainly in lowland rain forest, lowland dry forest, thorn forest, lower montane wet (or moist) forest, & lower montane dry forest. Occurs mainly from sea level to 1,300 m elevation

(one report at 2,000 m). Occurs from southern Mexico to northwestern Colombia, except no specimens from Belize, so far.

Activity and Behavior

Mainly nocturnal, but active at dusk, dawn & sometimes after rains. Mainly terrestrial & burrows in loose soil & leaf litter. Usually not aggressive, but will bite if restrained or molested.

Oviparous (clutch size reportedly 2-11 eggs) & eats locally available other snakes (cannibalistic), lizards, amphibians, & invertebrates.

Venom Characteristics

Has mainly potent neurotoxic venom which can be injected through a pair of grooved, upper, fixed front fangs. Due to the small size of their mouths, coral snake bites to humans usually occur on a finger or toe, & usually during attempts to catch the snake. This species is abundant throughout most of its range, & is the main cause of coral snake bites of humans within its range.

Micrurus stewarti

Identification

Family: Elapidae

Scientific Names: *Micrurus schmidtii*, *M. smithi*, *M. stewartii schmidtii*, *M. s. stewartii*

Common Names: Panamanian coral snake, coral, coralilla, gargantilla

Description

Medium-sized, relatively stout, bicolored coral snake, adults usually 50-70 cm long (max. 83+ cm). Front of head black & the back part red. Body patterned w/ relatively broad reddish (or orange, rarely white) rings separated by 13-25 black rings of varying width. Tail w/ 3-5 black rings. Dorsal scales of red (or orange, or white) rings usually w/ obvious black tips. A 2-colored yellow-&-black form of this species has been reported.

Habitat

Mainly found in subtropical wet forest & lower montane wet forest, at 100-1,200 m elevation. Known only from El Valle de Anton & Cerro Bruja & associated uplands (Sabanita). These localities lie in highlands of moderate elevation that flank either side of the Panama Canal.

Activity and Behavior

Not well known. Mostly nocturnal & terrestrial (burrows in loose soil & litter); quite secretive, mainly lives underground & rarely comes out in daytime. Reportedly has a mild disposition, but may occasionally bite if restrained. Most species of coral snakes usually are nonaggressive. Probably oviparous (clutch size not known, but probably small). Probably preys on locally available other snakes, lizards, amphibians, & maybe invertebrates.

Venom Characteristics

Not much known. Most species of coral snakes have highly potent, mainly neurotoxic venom which can be injected through a pair of grooved, fixed, upper front fangs. Due to their small mouths, coral snakes' bites to humans usually occur on a finger or toe, or webbing between them, & usually during attempts to catch or handle the snake.

Pelamis platurus

Identification

Family: Hydrophiidae

Scientific Names: Anguis platura, Hydrophis bicolor var. sinuata, H. pelamis, Hydrus bicolor, H. platurus, Pelamis bicolor, P. b. var. sinuata, P. b. var. variegata, P. ornata. P. platurus, P. schneideri

Common Names: Yellow-bellied sea snake, Pelagic sea snake, cantil listada, zapatilla, serpiente de mar

Description

Medium-sized, slender sea snake, adults usually <75 cm long (max. 113 cm). The tail is laterally flattened & oarlike. Body color pattern is highly variable (in detail) but basically involves a black or brown dorsum w/ a yellow or cream venter (lower half). Color of tail is yellow, w/ alternating upper & lower large dark blotches (sometimes w/ 1 or more stripes) on both sides.



Habitat

Found only in the Pacific & Indian Oceans; sometimes drifts in large numbers in offshore waters w/ temperatures >20 degrees C. Can be found in coastal (or even open ocean) marine waters from South Africa, to the Persian Gulf, to India, to Australia, to the western coasts of Central & northern South America. Rarely, individual specimens may be found outside this range (e.g, on western Mexican coast).

Activity and Behavior

Usually floats among flotsam or floating seaweed at the surface in tropical or subtropical zones of the Pacific & northern Indian Oceans. Captures small fish that happen near via a quick sideways lunge. Quite inoffensive, but when restrained or when stranded on a beach it will bite (& may actively strike) to defend itself.

Venom Characteristics

Highly potent venom containing post-synaptic neurotoxins. Most natural marine predators, like predatory fish & even sharks, usually avoid this snake. Scavengers also tend to avoid specimens which have been washed up onto a beach & are dying.

Phoneutria spp.

Identification

Family: Ctenidae

Scientific Names: [Note: This genus currently includes 5 named species: *Phoneutria bahiensis*, *P. boliviensis*, *P. fera* (the largest, & shown here), *P. nigriventer* (bites sometimes lethal without use of antivenom), & *P. reidy*.]

Common Names: Wandering spiders, banana spiders, South American wandering spiders

Description

Large, stout spiders w/ body (cephalothorax + abdomen) about 3.5 cm long, legs usually span 5+ cm. Body color light to dark-brown to black, covered w/ thick, short yellow to dark-brown hairs. Pattern varies by spp., usually a middorsal dark line on carapace & lines &/or bands of whitish spots (some spp. w/ dark-brown spots too) on top &/or sides of abdomen. Front 2 pairs of legs w/ distinct lighter ventral crossbands which show during threat displays.



Habitat

Most spp. are found mainly at or near ground level in moist to seasonally dry margins of forest clearings or at agricultural sites (esp. around bananas), w/ vegetation, organic debris, & lots of hiding places (like between palm fronds) & ample prey. Some spp. common in & around humans' buildings. Individual species' ranges differ, most limited to central & northern South America (1 sp. in Central America) at low to moderate elevations. Often carried long distances in commerce.

Activity and Behavior

Mainly nocturnal, respond to vibrations, usually wait in hiding & "ambush" a wide variety of prey (mainly insects & other arthropods, but often small vertebrates, too). Surprisingly quick, fast, & agile for their relatively large size. Adult females can jump about 1 ft. laterally at the same level as their resting place. Aggressive if even slightly disturbed, usually raise front 2 pairs of legs (fully extended) in a threat display, just before rushing at an intruder.

Venom Characteristics

Mainly neurotoxic (w/ possible cardiotoxic factors), most spp. have large volume of venom available. Several spp. are easily provoked to bite if disturbed, stepped on (or near), or brushed against. Only 1 sp. (detailed separately) is known to cause human fatalities, but others can inflict very painful bites & may pose a health risk, especially to persons w/ other medical problems. For details of typical symptoms of serious envenomation,

ATTACHMENT F: TRAINING COPY CERTIFICATES

Both HSOs are currently in progress for updating their trainings. Certification will be earned in First Aid and CPR before January travel.

ATTACHMENT G: REQUIRED MEDICAL KIT CONTENTS

Required Group Medical Kit Contents

There will be one (1) large medical kit with the contents listed in Table I-1. Additionally, each group will have a smaller travel site medical kit with them when they travel. Currently it is anticipated there will be 6-8 people traveling with each group performing site assessments in a groups of two (2) at a minimum. Based on the potential for up to four (4) groups traveling at the same time, we will have four (4) medical kits. Additionally, EWB-USA members will not provide treatment for host country community members beyond first aid unless they are licensed medical professionals and understand the local laws on practicing medicine.

Table G-1 – Required Medical Contents List

NUMBER IN KIT	ITEM
1	Site Specific Health and Safety Plan Page one is the Emergency Contact Page, laminated and printed on brightly colored paper The personal medical checklists should be placed in a sealed envelope immediately following the Emergency Contact Page, or the location of the Checklists should appear here. HSOs must return the checklists to their owners at the end of the trip.
1	A field manual of first aid can be very useful for rapid reference. One recommended book is: "The Field Guide of Wilderness and Rescue Medicine" by Jim Morrissey and David Johnson *
1	Small notebook and pen/pencil for recording vital signs
2	Safety glasses (for bloodborne pathogens)
2	CPR face shields or (even better) pocket mask
1 box	Sterile and non-sterile gloves, 1 box or a minimum of 12 pairs
1 box	Antiseptic wipes or "baby wipes" - 1 box
1 bottle	Alcohol-based gel hand cleanser - 1 bottle
12	Providone Iodine swabs or a small bottle of betadine
1 bottle	Antibacterial soap
1 bottle	Hydrogen peroxide
3 bottle	Sterile Eye Wash. Opened bottles should be replaced at the start of every trip
1	Cold pack – 4 in. x 5 in
3	Extra soft toothbrush for cleaning wounds
1 tube	Antibiotic ointment (Neosporin, Bacitracin, or generic equivalent) - 1 tube
1	Topical over the counter anesthetic (Anbesol or Chloraseptic spray) Fouille First Aid Ointment if you can get it.

Table G-1 – Required Medical Contents List

NUMBER IN KIT	ITEM
1 box	Band-Aid assortment; and Blister dressings (Bandaid blister, moleskin, etc. Choose band-aids with elasticized cloth that stay on for days. Plastic ones don't last as long.)
3	Absorbent compress or Trauma Dressings ~ 32 sq. in. (81.3 sq. cm.) with no side smaller than 4 in. (10 cm)
1	Adhesive tape, 5 yd. (457.2 cm) total
6	Burn treatment, 0.5 g (0.14 fl. oz.) applications
4	Triangular bandages, 40 in. x 40 in. x 56 in. (101 cm x 101 cm x 142 cm)
2	Roller bandage - 4 in. (10 cm)
1	Roller bandage - 2 in. (5 cm)
1	Ace Wraps – try to get a few sizes of these
1 box	Sterile gauze pads, 4x4”
1 box	Non adherent dressing (Telfa), 4x4”
1	Roll of Coban wrap (a.k.a. Vet Wrap)
2	Scissors, one pair of trauma shears for slicing bandages and cutting clothing, and one small pair for cutting more delicate things (like skin)
2	Tweezers, one small for pulling splinters and stingers, and a broader tip with grippers for picking rocks out of wounds.
Small box	Safety pins of various sizes
1	Thermometer
1	Ziplock bag containing a clean XL t-shirt. Can be cut up for bandages, used as a sling, or put on a patient for modesty.
Appropriate to trip duration and number of travelers	Iodine tablets OR chlorine tablets with neutralizer for disinfecting water * 1 ft square of muslin cloth for filtering sediment from water before disinfection *
1	Portable water filter, such as the ceramic type with the 0.2 pm filter. Three stage MSR or PUR water filters are probably the best. If the water is clear, the new light sterilizers work. *
1	Emergency Dental Kit (Cavit if you can get it) *
1	Stethoscope *
1	Four inch SAM splint *
1	Finger splint *

Table G-1 – Required Medical Contents List

NUMBER IN KIT	ITEM
1 box each	Mylanta Pepto Bismol Imodium tablets Cimetidine * Motion sickness pills are useful in vomiting illnesses and much safer than what might be given at the local clinic Benadryl or generic diphenhydramine, 25 mg capsules Tylenol (500 mg tablets) Ibuprofen (200 mg tablets) Aspirin (for Heart attacks)
Appropriate to trip duration and number of travelers,	Primatene Mist * Steroid cream for rashes Powder (Monkeybutt) for chafes * Antifungal cream * Antiyeast tablets or cream for women * NeoSynephrine nasal spray *
Up to 1/day	Gatorade packets
Appropriate for number traveling	Small hard candies like Jolly Ranchers or LifeSavers (must contain sugar – for diabetics) *
Appropriate for number traveling	Sodium tablets – for cramps in the heat *

ATTACHMENT H: TASK HAZARD MANAGEMENT STRATEGIES

Task Hazards List

TASK HAZARD	DESCRIPTION	REVISION DATE
TH 01	Noise and Hearing Conservation	May 2008
TH 02	Inclement Weather	May 2008
TH 03	Heat Stress	May 2008
TH 04	Cold Stress	May 2008
TH 05	Foot Care	May 2008
TH 06	Confined Space	May 2008
TH 07	Hot Work	May 2008
TH 08	Manual Lifting and Handling of Heavy Objects	May 2008
TH 09	Rough Terrain	May 2008
TH 10	Housekeeping	May 2008
TH 11	Structural Hazards	May 2008
TH 12	Remote Areas	May 2008
TH 13	Working over or near water	May 2008
TH 14	Traffic and Vehicles	May 2008
TH 15	Heavy Equip Operation	May 2008
TH 16	Working at Elevation and Fall Protection	May 2008
TH 17	Ladders	May 2008
TH 18	Shoring and Trenching	May 2008
TH 19	Hazardous Materials Use and Storage	May 2008
TH 20	Demolition	May 2008
TH 21	Active and Abandoned Utilities and Landmines	May 2008
TH 22	Electrical Safety	May 2008
TH 23	Hand and Power Hand Tools	May 2008
TH 24	Hand and Emergency Signals	May 2008
TH 25	Lock Out Tag Out	May 2008
TH 26	Biological Hazards	May 2008
TH 27	Hazardous Materials	May 2008
TH 28	Clearing Grubbing and Logging	May 2008
TH 29	Falling Objects, Punctures and Abrasions	May 2008
TH 30	Silica	May 2008
TH 31	Not Used	May 2008

**ATTACHMENT I: INCIDENT REPORT (Form 612) & ROOT
CAUSE ANALYSIS (Form 613)**

Incident/Near Miss Investigation Report		
<p>This report is to be completed for any incident that occurs associated with the project. It is to be filled out by the Site Health and Safety Officer or Project Leader and submitted as soon as possible to EWB-USA chapter relations manager (CRM) for review, although submissions may be accepted from any source. Independent of this report, if injuries requiring more than local first aid or a fatality are experienced, then the Project Leader and/or Site Health and Safety Officer must immediately contact EWB-USA for guidance.</p> <p>EWB-USA EMERGENCY TELEPHONE: +1 303 478-8244 – Cathy Leslie or Tracy Beavers SEVEN CORNERS INSURANCE: U.S., Canada & Caribbean: 1-800-690-6295 (Toll Free) International: + 800-690-6295 Collect Calls: 0-317-818-2808 (This line is monitored 24 hours a day) ISOS PHILADELPHIA Alarm Center: +1 215 942 8226 – Membership number #11BCPA000270</p>		
INCIDENT TYPE (circle one): INCIDENT NEAR-MISS INCIDENT		Date of Incident:
Did the Incident result in any of the following? Check all that apply:		Which of the following occurred? Check all that apply.
<input type="checkbox"/> Fatality <input type="checkbox"/> Injury that resulted in a lost work/school day <input type="checkbox"/> Injury that resulted in being assigned a lighter task <input type="checkbox"/> Illness requiring doctor visit / Evacuation <input type="checkbox"/> Off-the-job Injury <input type="checkbox"/> Interruption to the project schedule <input type="checkbox"/> Fire / Local Property Damage <input type="checkbox"/> Evacuation / Extraction from Country <input type="checkbox"/> Incarceration / Person In Custody / Unable to Leave Country		<input type="checkbox"/> Equipment failure, or Improper use of equipment <input type="checkbox"/> Motor vehicle accident <input type="checkbox"/> First aid administered <input type="checkbox"/> Medical attention—local clinic <input type="checkbox"/> Medical attention—hospital <input type="checkbox"/> Assault / Criminal Activity / Vandalism / Theft <input type="checkbox"/> Natural Disaster/ National Event <input type="checkbox"/> Other (Please Explain) <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
CHAPTER:		
CHAPTER REGION (CIRCLE ONE): NORTHEAST SOUTHEAST WEST COAST MIDWEST SOUTH-CENTRAL MOUNTAIN		
Project Name:		Project Phase:
Work Location, Country, Region/Closest Village/GPS coordinates:		
Project Faculty Advisor:		Project Professional Mentor:
Project Health and Safety Officers:		Project Leader:
NOTIFICATION		
Date EWB-USA notified of Incident / near miss: (MM/DD/YYYY) / /		
Were the local police notified/police report filed? <input type="checkbox"/> Yes <input type="checkbox"/> No		Name of Officer/Case Number:
Was ISOS Contacted? <input type="checkbox"/> Yes <input type="checkbox"/> No		Was an embassy or consulate contacted? <input type="checkbox"/> Yes <input type="checkbox"/> No (Please Indicate country if not U.S.)
Were Emergency Contacts notified? <input type="checkbox"/> Yes <input type="checkbox"/> No		Was anyone evacuated/sent home early? <input type="checkbox"/> Yes <input type="checkbox"/> No
GENERAL INFORMATION		
Where did Incident / near miss occur? (Be as precise as possible): <div style="border: 1px solid black; height: 100px; width: 100%;"></div>		

ROOT CAUSE ANALYSIS (TO BE COMPLETED BY PROJECT TEAM WORKING TOGETHER WITH H&S COMMITTEE MEMBERS)				
PROJECT NAME:		PROJECT PHASE:		
PROJECT LOCATION:		CHAPTER:		
REGIONAL TAC:		TRIP DATES:		
# Root Cause and Contributing Factors: Conclusion (Describe in Detail Why Incident / Near Miss Occurred)				
1				
2				
3				
4				
5				
Root Cause(s) Analysis (RCA):				
1. Lack of skill or knowledge		5. Correct way takes more time and/or requires more effort		
2. Lack of or inadequate operational procedures or work standards		6. Short-cutting standard procedures is positively reinforced or tolerated		
3. Inadequate communication of expectations regarding procedures or work standards		7. Uncontrollable		
4. Inadequate tools or equipment or equipment malfunction/failure				
RCA #	Solution(s): How to Prevent Incident / Near Miss from Recurring	Person Responsible for Implementing Solution	Due Date	Closure Date
Investigation Team Members				
Name	Indicate Project Team HSO, Project Team Member, EWB H&S Committee member, EWB Staff, other		Date	
Results of Solution Verification and Validation				
Reviewed By				
Name	Indicate Project Team HSO, Project Team Member, EWB H&S Committee member, EWB Staff, other		Date	

ATTACHMENT J: EMERGENCY RESPONSE PLAN (FORM 614)

614 - EMERGENCY RESPONSE PLAN

The health and safety of our members is a priority for EWB-USA. International field work in general and specifically construction is inherently dangerous and carries additional hazards that may not be mitigated by planning. The Emergency Response Plan is the team's guide for handling both emergent (serious injury or illness that requires medical treatment in country, or safety situations that involve non-EWB-USA personnel) and non-emergent incidents (minor injury or illness) that involve EWB-USA members during EWB-USA trips. This plan consists of the following:

- 1) Process Flow Instructions** – Detailed instructions for what to do under each step of the process flow for each of the three types of incidents;
- 2) Process Flow Chart** (Page 6) - Provides the basic outline for the procedures to follow for each of the three types of incidents – minor injury or illness, serious injury or illness, and safety situations; and
- 3) Incident Report Form (form 612)** – Form which standardizes the documentation of incidents. Documenting and reporting incidents or near incidents is necessary so that the H&S program can continue to evolve, improve and serve to provide the best protection possible for our volunteers and in-country partners. This form can be found on the Sourcebook Downloads page of the website and should also be included in your HASP.

Process Flow Instructions

The incident response process flow follows the three types of incidents:

- Steps A1 – A6b: Minor injury or illness;
- Steps B1 – B9: Serious injury or illness; and
- Steps C1 – C9: Safety situations.

The Health and Safety Officers (HSOs) will be responsible for determining if the incident is a minor injury/illness or a serious injury/illness. The HSOs will also initiate these response steps, depending on the incident type.

MINOR INJURY/ILLNESS

Definition: Minor injury or illness is described as an occurrence that is not life-threatening and does not require hospitalization. A minor injury or illness can be treated by the HSO on-site using the team's first aid kit or at a local clinic.

A1. Health and Safety Officer (HSO) Notified

The HSO should be notified of the team member who has suffered a minor injury or illness. If the HSO is the team member who has suffered a minor injury or illness, then

the second HSO should be notified.

A2. Treat On-Site

The HSO or other trained person should treat injury or illness on-site using first aid kit or should assist victim in getting to local clinic for medical attention.

A3. Rest and Reduce Activity

The person who has suffered a minor injury or illness should rest and reduce his/her level of activity until he/she is feeling better.

A4. Prepare Incident Report

The HSO should complete an incident report for any minor injury or illness and this should be submitted to the EWB-USA chapter relations manager (CRM) immediately upon return to the U.S.

A5. Monitor Condition

The HSO should continue to check-in with the affected team member and monitor his/her condition.

A6a. Closeout Incident with National Office

When the incident has been resolved in its entirety, the HSO should send a close-out e-mail to chapter relations manager (CRM) to let the national office know that no further action is necessary.

A6b. Condition Worsens

If his/her conditions worsens to a major injury or illness, the HSO should be contacted immediately and should follow the process flow for Step B – Serious Injury or Illness.

SERIOUS INJURY/ILLNESS

Definition: Serious injury or illness is described as an incident that may or may not be life threatening, but requires hospitalization or evacuation.

B1. Health and Safety Officer (HSO) Notified

The HSO should be notified of the team member who has suffered a serious injury or illness. If the HSO is the team member who has suffered a serious injury or illness, then the second HSO should be notified.

B2. Stabilize Victim

The HSO should stabilize the victim.

B3. Transport Victim to Medical Facility

The HSO should determine the best way to transport the victim to a medical facility based on the type and seriousness of injury or illness. *Please note: Seven Corners does not assist with finding a local ambulance or emergency transport, but you should*

maintain receipts so that you can seek reimbursement from Seven Corners.

B4. Contact Seven Corners Insurance or Contact University/College Travel Insurance (for student members who do not have Seven Corners Insurance)

Another team member should contact Seven Corners Insurance as soon as possible, but within 48 hours of the incident, to inform them of the situation. If the injury seems life threatening, call Seven Corners so that they can be prepared to start evacuation procedures should final medical analysis require evacuation

U.S., Canada & Caribbean: 1-800-690-6295 (Toll Free)

International: * [Toll Free Country Access Codes](#) + 800-690-6295

Collect Calls: 0-317-818-2808 (This line is monitored 24 hours a day)

When contacting Seven Corners, please have your ID card on hand so you can supply the following:

1. Your full name as it appears on the card
2. Your policy Certificate #
3. Date of Birth

*Please Note: In medical emergency and/or medical evacuation situations, no cash/credit card should have to change hands. Once you/your team calls Seven Corners' 24/7 number, a call from the insurance company to the evacuation service/hospital should suffice to ensure that payment is guaranteed. **All claims will be settled directly by Seven Corners.** EWB-USA is not responsible for claim settlement.*

For students who are covered by their university/college travel insurance and who do not have Seven Corners insurance, you should follow the procedures provided to you by your university/college and insurance company you are covered by.

B5. Call EWB-USA Emergency Phone

Contact the EWB-USA emergency phone: [+1 303 478-8244](#) to report the situation. The EWB-USA national office will notify the victim's emergency contact listed on the 606 – Emergency Contact Page.

B6a. Hospitalize

If recommended by the physician, admit the victim to a hospital. Contact Seven Corners to determine if hospital is within Seven Corner's network, in which case Seven Corners will arrange payment directly with the hospital upon patient's discharge from the facility.

B6b. Emergency Medical Evacuation

If medical evacuation is recommended by the attending physician, contact Seven Corners to make evacuation arrangements for the associated expenses. It is important to remember that evacuation travel (and related) charges which have not been approved and arranged by Seven Corners will not be eligible for insurance benefits.

If Seven Corners does not provide adequate assistance, contact International SOS.

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B6c. Release and Monitor

If recommended by the physician, victim can be released from hospital. HSO should work with victim to fill any prescriptions, follow any medical advice and should monitor the victim in case condition worsens. All receipts should be retained for reimbursement from Seven Corners.

B7. Prepare Incident Report

The HSO should complete an incident report for any serious injury or illness and this should be submitted to the EWB-USA chapter relations manager (CRM) immediately upon return to the U.S.

B8. Updates to EWB-USA National Office

After hospitalization, evacuation or release, contact the EWB-USA emergency phone to provide updates on the victim's condition. The EWB-USA national office staff will then notify the victim's emergency contact.

B9. Closeout Incident with National Office

When the incident has been resolved in its entirety, the HSO should send a close-out e-mail to chapter relations manager (CRM) to let the national office know that no further action is necessary.

SAFETY SITUATION

Definition: Any event which poses a threat to team members, including natural disasters, political insurrection, kidnap, ransom, or other life-threatening criminal activity.

C1. Gather Team Members and Seek a Safe Location

If the HSO is not aware of the safety situation, she/he should be notified. Meet at established emergency meeting point. Stay together as a group and seek safety.

C2a. Natural Disaster - Contact International SOS, U.S. Embassy

In the case of a natural disaster such as a flood or earthquake, contact International SOS. Insurance from Seven Corners applies only if a member of your team has a medical emergency. You may also contact the U.S. Embassy for information and possible assistance.

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C2b. Political or Military Events – Contact Seven Corners or College Travel

Insurance (for student members who do not have Seven Corners Insurance) and U.S Embassy

In the case of political or military events and there is a formal recommendation for you to leave the country, contact Seven Corners for assistance with evacuation to the nearest place of safety. If you are covered by your university's travel insurance, please follow those procedures. You may also contact the U.S. Embassy for information and possible assistance.

U.S., Canada & Caribbean: 1-800-690-6295 (Toll Free)

International: * [Toll Free Country Access Codes](#) + 800-690-6295

Collect Calls: 0-317-818-2808 (This line is monitored 24 hours a day)

When contacting Seven Corners, please have your ID card on hand so you can supply the following:

4. Your full name as it appears on the card
5. Your policy Certificate #
6. Date of Birth

C2c. Kidnap or Ransom – Contact EWB-USA Emergency Phone

In a case of kidnap or ransom, contact EWB-USA Emergency Phone immediately and wait for instructions. +1 303 478-8244

C3. Assess Injuries and Seek Medical Attention

If any team member has been injured and requires medical attention, begin the process flow starting with Step B1.

If injuries, go to Step B1. If no injuries:

C4. Contact EWB-USA Emergency Phone

If you have not done so already, contact the EWB-USA emergency phone: +1 303 478-8244 to report the safety situation.

Internet access and cell phone reception are still sometimes intact, even when landlines are not. Satellite phones are generally the best option. If telephone access is limited, EWB-USA can keep emergency contacts informed.

C5. Contact U.S. Check-In Contact

Contact the person designated as the U.S. Check-in contact on the 606 – Emergency Contact Information form and inform them of the situation.

C6. Prepare Incident Report

The HSO should complete an incident report for the crisis and this should be submitted to the EWB-USA Chapter Relations Manager immediately upon return to the U.S.

C7. Monitor Local News, Travel Information, and US Embassy Updates

If any team members have access to radio, television and/or internet, they should continue to monitor the local news and any travel information. Update all team members. The U.S. Embassy may also be in contact with your team to provide updates. The U.S. Embassy will use the contact information you provided when you registered before traveling.

C8. Provide Daily Updates to EWB-USA Emergency Phone and to US Check-In Contact

While team members remain in-country, provide daily updates to the U.S. Check-In and EWB-USA emergency phone (Cathy Leslie)

C9. Closeout Incident with National Office

When the incident has been resolved in its entirety, the HSO should send a close-out e-mail to chapter relations manager (CRM) to let the national office know that no further action is necessary.

614 - EMERGENCY RESPONSE PLAN - Process Flow Chart