

Ecosystem Management Emulating Natural Disturbance (EMEND) Project

Due Diligence and Safety Manual

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Subject to updates. Make sure you have the most recent edition.

Developed by Jason Edwards
EMEND Field Coordinator
Department of Renewable Resources
University of Alberta

This due diligence manual has been developed and implemented to help reduce risk to persons working and residing within, and traveling to and from, the EMEND Project as well as reduce risk of damage to University of Alberta equipment and vehicles used for EMEND related activities. This manual is intended for use by all University of Alberta employees and all non-University of Alberta persons using or visiting EMEND. This manual attempts to cover most risks associated with the most common activities and work practices at EMEND; however, some risks may not be covered in this manual. As such, CAUTION, CARE, and DUE DILIGENCE must be exercised in ALL activities related to EMEND. Failure to follow some of these safety procedures could result in loss of EMEND camp usage privileges or dismissal from employment.

EMEND industry partners have very well established worker instructions, environmental standards, and emergency response systems. EMEND personnel and users of EMEND facilities and worksite are required to follow safety and environmental procedures established by the EMEND industry partners. In any case where our partner's standards for safety and operating procedures are considered more stringent and/or safe than those outlined in this manual, their procedures shall be followed.

All proper and relevant training must be obtained before arriving at EMEND. Training will not be provided at or by EMEND. You must make sure you understand all safety measures in place before starting any activity at EMEND.

Remember to do a risk assessment BEFORE you start any activity. Deal with risks using the following hierarchy: 1) **eliminate risks** (example: Ask yourself "Do I really need to be doing this activity?" or "Do I really need five people watching me fall a tree with a chainsaw?").

2) **decrease risks** (example: wear Personal Protect Equipment (PPE), do not speed on an ATV)

3) **manage risks**: get appropriate training.

If you have any concerns, problems, or questions about EMEND safety please talk to the EMEND Coordinator.

EMEND Due Diligence Quick Reference Chart

Risk Category	Risk	Risk Minimizing Activities
Biological Hazards		
	<p>Mice (hantavirus)</p> <p>See Hantavirus information section for further safety measures.</p>	<ul style="list-style-type: none"> • NO FOOD IN TENTS. • Keep tents clean. • Spray down floor and benches with bleach-water before cleaning/sweeping. • Always wear gloves when handling a mouse trap and mice that have been caught in a trap.
	<p>Bears</p> <p>See bear safety page for more details</p>	<ul style="list-style-type: none"> • NO FOOD IN TENTS. • Receive bear training before arriving at EMEND (will not be provided by EMEND). • Use caution while traveling in the bush. • Carry a bear deterrent (i.e. bear spray) and have it handy. KNOW HOW TO USE IT!! • Keep air horn and bear spray in tents.
	<p>Moose</p>	<ul style="list-style-type: none"> • Can be dangerous during fall mating season. Pay attention while you are walking in the bush.
	<p>Water</p>	<ul style="list-style-type: none"> • All standing and flowing water at EMEND is unsuitable for drinking (may be contaminated with <i>Giardia</i> or other pathogens and parasites). • Do not drink any water from the EMEND research site. • Fresh water is shipped in to camp and is available for drinking.
	<p>Mosquitoes (West Nile Virus)</p>	<p>West Nile Virus occurs in Alberta although no cases. Make sure you are protected by wearing mosquito repellent and mosquito nets as much as possible.</p>

Risk Category	Risk	Risk Minimizing Activities
Chemical Hazards		
	Fueling (gasoline)	<ul style="list-style-type: none"> • All fuel containers must be marked properly according to MSDS standards (includes Jerry-cans). • Follow guidelines established by CanFor. • Have MSDS sheets available and easily accessible • Know location of spill kit
	Motor Oils and Chainsaw Oils	<ul style="list-style-type: none"> • All oil containers must be marked properly according to MSDS standards. • Follow guidelines established by CanFor. • Have MSDS sheets easily accessible • Know spill kit location
	Ethanol (denatured)	<ul style="list-style-type: none"> • All alcohol containers must be marked properly according to MSDS standards • No open flames or heat sources around alcohol • Know spill kit location
	Allergens	<ul style="list-style-type: none"> • Have list of people's allergies • People allergic to bee stings should carry an EpiPen at all times. You CANNOT administer an EpiPen to anyone else, even if they are in dire need. The person must inject the EpiPen themselves.
	Medications	<ul style="list-style-type: none"> • You CANNOT administer ANY medications to another person (including items like Tylenol). • Keep medications in their properly labeled container.

Risk Category	Risk	Risk Minimizing Activities
Physical Hazards		
	<p>Driving</p> <p>See EMEND driving safety and policies page for further details.</p>	<ul style="list-style-type: none"> • See University of Alberta policies on driving University of Alberta vehicles • No alcohol consumption 24 hours prior to driving • Be well rested • Stop frequently for breaks • Drive according to road conditions • Use caution when reversing vehicles.
	<p>Quads/ATVs</p> <p>See EMEND Quad safety and etiquette pages for further details.</p> <p>See ATV safety course book for more information.</p>	<ul style="list-style-type: none"> • Quads can be dangerous • Have proper training before arriving at EMEND. • Wear PPE • NEW 2004!! All quads must have either a fire extinguisher or shovel. • Go Slow • No doubling • Yield right of way to other motor vehicles • Watch out for other quad users. • Keep quad properly maintained • When transporting quad, make sure it is properly and securely tied down. • An ATV safety manual will be available at EMEND (for reference use only). • No alcohol consumption 24 hours prior to driving an ATV
	<p>Winches</p> <p>See EMEND winching safety page for further details.</p>	<ul style="list-style-type: none"> • Use caution when using a winch on a truck or quad. • Watch your fingers and wear gloves. • Stand clear of winch cable when it is under stress. Cable could become a dangerous projectile if it breaks.
	<p>Chainsaw</p> <p>See EMEND chainsaw safety page for further details.</p> <p>See Chainsaw safety course book for more information.</p>	<ul style="list-style-type: none"> • Safety training is a requirement. Anyone planning to use a chainsaw at EMEND must show valid training certificate before they will be allowed to use it. This rule applies to anyone using the EMEND site, including non-University of Alberta staff and students. • Be aware of Alberta Health and Safety regulations regarding the use of a chainsaw for felling trees. • Chainsaw Personal Protective Equipment (PPE) must be worn at all times while operating chainsaw. • A chainsaw safety manual will be available at EMEND (for reference use only).

	Sharps	<ul style="list-style-type: none"> • Use caution when handling a knife or other sharp item. • Be careful of sharp sticks while walking the forest.
	Tent Flooring	<ul style="list-style-type: none"> • Please wear clean footwear inside of tents at all times. The floors are made of wood and may give you a sliver.
	Forest Fires/ Campfires See EMEND campfire safety page for further details.	<ul style="list-style-type: none"> • Use evacuation plans developed by Estabrook and CanFor. • Make sure cigarettes/cigars are completely out. You may be held responsible for costs of fire fighting if you start the fire. • Campfires can be burnt only in designated campfire area in front of camp.
	Axes See EMEND campfire safety page for further details.	<ul style="list-style-type: none"> • Use axe in designated wood chopping area only. • Use in daylight only. • Proper Personal Protective Equipment (PPE) must be worn and used at all times (i.e. gloves, steel-toed boots, protective eyewear, etc.) • Use an appropriately sized axe for the job • Do not stand near someone who is using an axe.
	Weather	<ul style="list-style-type: none"> • Whenever possible try to get forecast before you head out for work. • Wear/carry appropriate clothing for locale and conditions. • Take appropriate measures during severe storms (i.e. Do not stand in an open clearcut during a lightning storm). • Wear sun protection and carry enough water for the day.
	Foot Travel	<ul style="list-style-type: none"> • Watch for holes, branches, roots, etc that could cause you to trip. • Whenever possible go under high barricades (i.e. fallen trees) instead of over. • Wear a hard hat at all times when traveling by foot in the forest
	Fire Arms See EMEND firearm safety page for further details.	<ul style="list-style-type: none"> • Firearms are allowed at EMEND for work purposes only. They are not allowed for recreation purposes. • You must comply to all Federal Firearm laws in order to carry/use a firearm at EMEND. • Before using a firearm for your work please make sure everyone knows where you will be working and that you know where everyone else is working. • Use of firearms at EMEND for bear protection is discouraged due to the large number of people working in the EMEND area.

EMEND Bear Safety

Developed by Jason Edwards, EMEND Field Coordinator 2002

All persons working at EMEND are advised to take a certified bear awareness course before coming to EMEND. The points listed below are simple reminders and are not intended to be a comprehensive bear awareness lesson.

In the Bush

Use caution when traveling in the bush. Watch for signs of bears in the area.

Be aware at all times.

Make noise (yell, loud bells, etc) as you walk or frequently if you are still.

Carry bear deterrent (i.e. bear spray) and have it handy. **KNOW HOW TO USE IT!!!!**

Make a note of where you saw the bear and alert other workers to bear sightings and signs.

Tents and camp

NO FOOD in tents. No exceptions (talk to EMEND coordinator if you have medical conditions that require you to have food nearby, i.e. diabetes).

No scented items (toiletries, soaps, lotions, etc) in tents. Please keep these items in the washroom trailers.

Each tent has an air horn. Know how to use it to scare off a bear (note: air horns are not toys. Do not use them as toys).

Failure to follow these rules puts yourself and everyone else in danger. You may lose your camp use privileges if you do not follow these rules.

Make sure lid on garbage bin is closed.

EMEND Vehicle and Driving Policies

Developed by Jason Edwards, EMEND Field Coordinator 2002

Driving

See University of Alberta policies on driving University of Alberta Vehicles.

No alcohol consumption 24 hours prior to driving.

Drive according to road conditions. Roads around EMEND are often wet, muddy, and rough. Go slow and use caution.

When driving long distances (i.e. from Edmonton to EMEND) stop frequently and be well rested before you begin driving.

Use caution when reversing vehicles.

Refrain, as much as possible, from driving trucks on the CANFOR haul road when it is wet. Driving on this road when it is wet creates deep ruts that become a major driving hazard when they later dry up.

Vehicles

Only authorized University of Alberta staff or students can drive University of Alberta vehicles.

Park “ready-to-go” when at EMEND camp. Please hang your keys in the common key area so your vehicle can be moved in case of emergency.

Keep an accurate log of all your trips. Note the reason for driving, kilometers driven and kilometers while towing.

Wash the vehicles when ever possible. Keeping the vehicles clean helps reduce wear and tear and thus costs.

EMEND Core Crew Quad Safety

Developed by Jason Edwards, EMEND Field Coordinator 2002

You must have certified ATV training before riding EMEND Core Crew quads. The EMEND field coordinator may deny you use of Core Crew quads if he/she feels you are not qualified to operate an ATV.

Proper Protective Equipment (PPE) must be worn at all times while operating an ATV. **Helmet and safety glasses are a must.** Gloves and steel toed boots are recommended.

All quads **MUST** have either a fire extinguisher or shovel at all times.

No doubling on quads is allowed under any circumstances.

Do not operate an ATV after having consumed alcoholic beverages. This is grounds for dismissal and/or loss of EMEND camp use privileges.

Do not speed on the trails and roads! This is how accidents occur and trails get damaged. Reckless driving will not be tolerated under any circumstances. Remember that quads are vital for work at EMEND, please treat them with respect.

Do not follow other vehicles too closely. Mud, rocks and dust thrown by the tires can injure you or impede your vision.

Be aware of other users on the road. Remember that the DMI and CANFOR haul roads are open to public. Always yield to oncoming traffic and use caution when entering the roadway. Be aware of vehicles approaching from behind you. If a vehicle wishes to pass you, pull over **AND STOP** to let it pass. Do not pass a slower vehicle until the driver has signaled for you to pass.

If you are driving a vehicle and come upon a quad, do not follow it too close and wait for the quad driver to signal you to pass before doing so.

Shift into 1st gear to go through muddy, wet trails or muskeg.

Remember to keep your quad well maintained. Alert the EMEND coordinator to any problems you are having with your quad (refers to EMEND Core Crew quads only). If you experience any problems with a Core Crew quad, please fill out the EMEND Quad Problem form.

A copy of an ATV safety course manual is available for reference and for review of safety procedures. Please ask the EMEND coordinator if you wish to view it.

EMEND Quad Trail Etiquette

Developed by Jason Edwards, EMEND Field Coordinator 2002

All quad trails receive a high degree of traffic. Let's try to keep our trails in good shape by following the trail etiquette outlined below.

1. Do not speed!! This is how trails get damaged and accidents occur. The EMEND coordinator will monitor trail use and damage. Keep in mind that trail damage can be avoided in most cases.
2. When going through mucky/wet trail conditions, do so in 1st gear to minimize trail damage and to avoid getting stuck.
3. When stuck, do not gun the throttle. This will only deepen the ruts/hole that you're in. Get off the quad and try to push it out or reverse it out while applying moderate pressure to the throttle. If that doesn't succeed, use the winch (see winching safety sheet) or get your partner's help.
4. Try not to widen the trail, create a go-around, or drive in the landing or machine corridors. This only degrades the environment further. Try to repair the trail before creating a go-around and before the ruts get too deep. If a section of trail is consistently bad, talk to the EMEND coordinator about proper repairs.
5. If there are fallen trees across the trail, try to move them or remove them using a chainsaw rather than creating a go-around (get EMEND coordinator's assistance to remove the tree if you are not certified to use a chainsaw).

EMEND Winch Safety

Developed by Jason Edwards, EMEND Field Coordinator 2002

The following points should be followed when using a winch, either on a quad or truck.

Do not burn out your winch!! When pulling the cable out, use the free-spool option. Make sure that you reset the winch before winching the cable in.

Do not run the winch continuously; you will burn out the motor. Use 15 sec intervals and wait to let it cool down. Burned out winches will not be replaced.

Try to make sure that the cable is wound properly. This prevents the winch from jamming. It is often beneficial to rewind your winch after heavy use.

Be careful of your fingers when winching in the cable. WEAR GLOVES when handling a winch cable.

Always attach the cable securely to something solid when stuck.

Don't sit on the quad when using the winch. Your weight isn't beneficial.

Stand clear of the winch cable. If a truck's winch cable snaps during use, it quickly turns into a deadly projectile. Be aware of this especially if you are sitting in the truck's cab.

EMEND Chainsaw Safety and Policies

Developed by Jason Edwards, EMEND Field Coordinator 2002

Certified chainsaw safety training is required if you are to be using a chainsaw at EMEND.

You must show your training certificate (or photocopy) to the EMEND coordinator before using a chainsaw at EMEND.

Be aware of Alberta Health and Safety regulations regarding the use of a chainsaw for felling trees.

Chainsaw Personal Protective Equipment (PPE) must be worn at all times while operating a chainsaw (see Chainsaw safety book located in EMEND office for list of PPE).

A chainsaw safety manual will be available at EMEND (for reference use only).

EMEND Campfire Safety

Developed by Jason Edwards, EMEND Field Coordinator 2002

Campfires

All campfires must be cleared through EMEND coordinator before being lit. Be aware of forest fire rating. If rating is high then campfires will be banned (EMEND coordinators' decision).

Campfires can be burnt only in the designated campfire pit.

Keep fire small.

Be careful not to burn yourself while adding wood.

Place wood onto fire; do not throw it on. Throwing wood onto the fire causes excessive and dangerous sparking.

Be cautious of smoke and sparks.

Make sure the fire is out (cool enough to stick you hand in the ashes) before you leave the fire unattended.

Chopping Fire Wood

Use the axe in designated wood chopping area only.

Use axe in daylight hours only.

You must wear gloves, safety goggles, and steel-toed boots when handling an axe.

Use the appropriately sized axe for the job.

Do not stand near someone who is using an axe.

While handling an axe, watch out for mud, loose gravel, or any other items that may cause you to slip or fall. A fall with an axe in the hand could be deadly.

EMEND Smoking Policies and Rules

Developed by Jason Edwards, EMEND Field Coordinator 2002

NO SMOKING in any tents or trailers.

No smoking near any of the fuel containers.

Smoke only in areas with barren, mineral soil ground (i.e. a haul road).

Do not walk around with a lit cigarette. If you are going to smoke, stop and remain in one place.

When finished, make sure cigarette is out then bury it into the mineral soil.

If you smoke, you must make sure your cigarette/cigar is out. You may be held accountable for costs of fighting a fire caused by your cigarette.

EMEND Firearm Safety

Developed by Jason Edwards, EMEND Field Coordinator 2002

Firearms are allowed at EMEND for work purposes only. They are not allowed for recreation purposes.

You must comply to all federal firearm laws in order to carry/use a firearm at EMEND.

Before using a firearm for your work please make sure everyone knows where you will be working and that you know where everyone else is working (use the sign in/sign out board and alert the EMEND coordinator).

Use of firearms at EMEND for bear protection is discouraged due to the large number of people working in the EMEND area.

EMEND Tent Safety and Etiquette

Developed by Jason Edwards, EMEND Field Coordinator 2002

Safety

NO FOOD in tents. No exceptions (talk to EMEND coordinator if you have medical conditions that require you to have food nearby, i.e. diabetes).

Failure to follow these rules puts yourself and everyone else in danger. You may lose your camp use privileges if you do not follow these rules.

Wear clean footwear inside the tent to help prevent any slivers from the wooden floor.

Be cautious of Hantavirus and use proper cleaning procedures to clean out tents (see hantavirus section). Wear a mask and gloves when handling traps or dead mice.

Etiquette

Remember that you are sharing a tent with other crew members. Please be respectful of their space and belongings.

Do not wear muddy shoes/boots/clothing inside the sleeping tents.

Keep tent clean.

Keep bug screens zipped closed as much as possible.

You are responsible for cleaning your tent space and floor.

EMEND Sign Out and Sign In Procedures

Developed by Jason Edwards, EMEND Field Coordinator 2002

Prior to leaving for the field, you are required to sign out on the white board. Ensure your name, date, location, and expected time of return is recorded.

If you must work past your expected time of return, please radio and let your coordinator or designate know.

Note any dangerous equipment you will be using (i.e. chainsaw, firearm, etc.).

A search crew will be sent to look for you if you have not radioed or returned by one hour past your expected time of return. The EMEND core crew will initiate the search and if you cannot be found immediately, the CANFOR Emergency Response for lost persons will be initiated.

When you return to camp, please sign in by erasing your information. If you do not erase your information upon return, you will be assumed lost.