

PACKING FOR AN MFMT DEPLOYMENT

Not all deployments will require field living conditions, but the possibility exists that you will be required to "rough-it" for a few days. In many disaster situations there may be a shortage of safe food, water, power, garbage removal, and proper housing. The team must be prepared to survive and operate in these austere conditions for at least three (3) days without support or resupply.

Remember to have your gear packed and ready to go at all times.

Gear Containment

There are many ways to transport your gear. The military and many DMAT teams use the two basic personal bag systems. Here are some tips to help you be prepared.

The duffel bag (the larger bag) carries most of your clothing and equipment. Some duffel bags have shoulder straps as well as handles. Duffle bags with wheels are strongly recommended. Remember whatever you pack you must be able to carry and wheels make transport a lot easier. Bring only what you think you will need. You don't want unnecessary weight to lug around. Remember in rare instances you may need to be transported by military aircraft, these aircraft have a 70 pound limit. Hard packs or suitcase can be used, but may not work as well.

Backpacks are good for packing your "immediate needs". Make sure to pack at least a 5 day supply any personal medications, sunglasses, extra glasses, a book or something to entertain yourself with, a 24-hour supply of food (MRE's are packaged and easy to carry) and 2 liters of water in your backpack so you always have these items with you. When placing items in your carry on, pack the softest items on the side that will be next to your back for your comfort. Rolling backpacks are also a good idea, as they can get heavy too.

Make sure to label both of your bags with a permanent marker so they can be easily identified when you are looking for your equipment. Also mark any personal items you may misplace, loan or leave lying out.



Waterproof your gear by packing items in zip lock bags or some type of plastic lined bag.

This will ensure that any items that leak in your pack are contained and if your bag is in inclement weather, the internal contents will stay dry. Line your whole duffel and backpack with garbage bags or other waterproof liners before you start packing.

Plastic travel bags with one-way air valves are good because they allow you to squeeze the air out and make things smaller while also waterproofing them. One of the best things is the kind of compressible storage bags that don't require a vacuum cleaner to get the air out. Just roll up the bag to squeeze the air out and put it in your pack. It has been found that if you put a day or two's worth of clothes in one bag (pants, team T, underwear, socks), you won't have to pull out a bunch of bags to get the clothes you need for a day.

Double bagging is also a good idea as water can find its way into very small holes. Make sure to keep everything you depend on dry!

Take extra bags of all sizes with you. Garbage bags are good for packing wet or dirty clothes; smaller zip lock bags are good for storing food after you open the original package.

Bag-in-Bag System

Organizing your clothing, supplies and equipment into smaller bags that you place in your duffel and backpack is helpful. It helps keep things dry, keeps like items together, helps keep you organized and if you are looking for something and have to take things out of your bag, it makes it easier to repack them.

Suggestions for things you may "bag":

- Food
- Clothing -individual items or a complete change of clothes (socks, underwear, shirt and pants)
- Medical equipment - stethoscope, B/P cuff, scissors, dressings etc.)
- Electronics (remember you are responsible for what you bring, so leave expensive items at home)
- Medications
- Toiletries
- Towel, washcloths, soap
- Books, playing cards, paper, pen

Nylon stuff bags and waterproof bags from any camping store useful in organizing personal gear. Nylon mesh laundry bags are great to hang damp clothing and towels in to air dry. Plain garbage bags are cheap and work well.

Packing for the Weather

MFMT missions can occur at any time of year, in any part of the state, in any weather. Deployments may vary from a snow storm in January to high humidity and torrential rains in June. You will need to be prepared for all conditions. Most members have a summer (hot weather) and a winter (cold weather) in their gear.

WARM WEATHER GEAR: In hot, humid conditions it will be important to have a light weight, light colored, loose fitting clothing. Cotton and cotton blends are desirable.

When on duty the team usually wears our BDU pants, t-shirt, under a set of scrubs. In warm weather we don't usually wear our jackets, but always make sure to bring your full uniform as you may need it.

In a warm weather climate you will also need sunscreen, insect repellent, a hat with a brim, a canteen, water bottle or camelback water system and sunglasses. You should also bring with you one or two outfits of personal clothing for off shift hours (you may want to consider shorts and jeans), a bathing suit, beach cover up and flip flops (which are also handy when you shower).

COLD WEATHER GEAR: When packing for cold weather remember the acronym WWW for WICKING, WARMTH, WEATHER and layering is a must. The layer of clothing next to your skin needs to be a wicking material such as silk or poly. The second layer is an insulator for warmth such as wool or a wool blend. The outer layer should protect you from the elements - wind rain and snow. Gortex is a good but expensive option. Avoid overheating and excessive sweating. By layering you can remove and add clothes as needed. Don't wear clothes made of nylon or vinyl, as they are poor insulators unless they are worn in combination with other materials.

Keeping your head and neck covered will do a lot to maintain your body heat. You can lose over 50% of your body heat from your uncovered head.

Sleeping Bag

When considering a sleeping bag for a disaster deployment first consider quality of construction. Bags are compared by their construction quality, loft, and effective temperature range.

Effective comfort range

- Measurements vary from brand to brand

Loft

- Refers to total thickness of the bag
- The more loft, the warmer the bag
- Measurement of loft varies from brand to brand

General Guide to Loft/Temperature Ratios of Sleeping Bags

The following table indicates roughly the amount of loft required for a temperature rating of a sleeping bag. Bear in mind that there are many factors that will influence the "comfort factor" of a bag at various temperatures such as cold spots in the construction of the bag, a person's individual body metabolism, wind, and humidity.

<u>Loft</u>	<u>Temperature</u>
1 inch	40
2 inch	30
3 inch	20
4 inch	10
5 inch	0

Most manufacturers indicate an effective temperature range for each model sleeping bag. Most do not state how they arrive at the rating. The temperature rating can be used to compare different models of a given manufacturer but must be combined with loft and other considerations when comparing models of different manufacturers.

It is important to select a sleeping bag rated for the temperatures you will encounter. Mummy bags are restrictive, but are good in temperatures below 30 degrees. Adding a silk liner to your bag will make it about 10 degrees warmer.

Using a foam pad under your sleeping bag to help reduce heat loss into the circulating air, also wearing a stocking hat and socks will also help maintain body heat as previously mentioned.

Shoes and Boots

You will probably be on your feet a lot so a good pair of boots is a must. You should have a good boot or shoe. Puncture wounds of the foot have shown to be a frequent injury in the post disaster environment. Make sure the shoe has ankle protection, a non-slip tread and thick soles. Do not take a brand new boot or shoe on a deployment. Make sure you have tested it and broken it in for comfort! Also bring along a more comfortable pair of sneakers in your pack to change in to during off duty time or if the deployment site warrants it. Your boots and shoes should be sprayed prior to deployment with commercial water repellent such as Scotch-Guard. If you can afford the more expensive breathable shoes, they are worth the money. If not, plan on bringing extra socks, as you will probably have to change them more often.



You want to make sure your feet stay dry, avoiding external and internal moisture (sweating). A sox liner with a heavier grade nylon sock or wool in winter is a good choice with your boots.

As long as we are talking about protecting our feet it is a good idea to packing a foot drying powder with your gear. In post disaster environments feet always seem to be wet from sweat.

Water and Food

Bringing a one to two day supply of food and water with you is a good idea as the team may be traveling and setting up a Base of Operations (BOO) early on and not have ready access to outside supplies.

Water can be easily carried in a water bottle, canteen or camelback water system. The food that you bring needs to be non-perishable and in single serving sizes. MRE's fit the bill, but you may prefer other options. Snacks, such as protein bars, are a good idea for quick energy. You will also want to have a mess kit or a cup, plate, bowl and silverware.

Personal Hygiene

Paying attention to your own personal hygiene is the best preventative medicine for disallowing yourself to get ill during a deployment. Changing your clothing daily, bathing, hand washing, repelling insects, foot care and other individual protective measures will make your deployment more successful.

Keep your feet clean and dry them well after bathing. Change your socks at least daily or when wet. Shower as often as possible to avoid skin disease. If unable to shower, at least wash your face, underarms and groin, etc. daily (commonly called a PTA)... your bunk mates will thank you for it. When water is not readily available for washing, consider packing in your gear a box of baby-wipes. These anti-bacterial wipes will provide you with some refreshment and assist in keeping the bacteria level down and your skin clean. Always wash your hands after using the latrine and before eating. Even if you don't do this when not on a deployment! While taking care of patients, wash your hands between every patient.

Human Waste

There are a number of ways to handle human waste. If no bathrooms or portable toilets are available, the easiest method is the bucket latrine. The bucket system is much simpler than it appears and is actually a lot easier than the old burial system. The items necessary include, 5 gallon buckets, a plastic toilet seat, large, heavy duty plastic bags (#15 trash compactor bags work well), deodorant chemical (septic-mate, aqua-chem, chlorine bleach, quick lime, etc.) toilet paper, 1 gallon hand washing bucket and liquid soap, rubber gloves and scissors. The system is set up as follows: The 5 gallon bucket serves as the actual toilet container. First line the bucket with two of the heavy duty plastic bags. Fold the excess bag around the top edge. Pour the deodorant into the open bag top and place the toilet seat on top of the bucket. The toilet is now ready to use. The hand washing bucket and liquid soap can be placed close by. Used toilet paper and articles particular to feminine hygiene (tampons and sanitary napkins) can be placed directly into the toilet. After each deposit, the toilet is covered with a large plastic bag, thus discouraging flies.

When 1/2 full it takes only a few minutes to remove the contents and make the toilet ready for the next use. Put on your rubber gloves, squeeze the excess air out of the bag and tie it off. This portion of the job should be done by the person with the highest HAZMAT training on the team. Tie the first bag and place the bag containing the feces into a second bag if you have not already done so. This is a security measure against leakage. The second bag is then tied off securely and the whole thing is disposed of in an appropriate place away from the MMCF site. The amount of chemical used per day depends on the type used and the amount of people using each toilet. With liquid deodorant, a few ounces at the bottom of the bag is sufficient for six or seven people per day (follow directions on the container). If you are using bleach, more is required, approximately double. Quick lime should be sprinkled over feces after each use (in place of flushing). The deodorant reduces bacterial growth in the feces and the production of methane gas. Wash hands thoroughly after handling the toilet.

Sometimes, portable toilets will be available for the teams use. These toilets have a chemical added to the holding tank that will deodorize and enzymatically degenerate bodily wastes.

Chemical toilets should be located downhill and downwind from the MMCF and MFMT living site. They should be emptied as necessary and should not be used to the point of overfilling.

Team Safety during the Deployment

There's an old joke in the Fire Service. "Fireman are crazy... Whenever there is a fire, which way to people run.... Away from it!.... Which way to firemen run.... Toward it!"

Why is it that people feel comfortable in running toward a dangerous situation? In the case of the MFMT member, it's because of the fact that when the team deploys, we do not deploy blindly. The team leadership keeps team safety in mind whenever we make decisions. In fact, team safety is the job of every team member. Every action you do during a deployment should be done with the safety of the team members in mind. Some of the actions you can take that will promote team safety include:

Follow the incident command system. Do not self-task. Be where you're supposed to be; when you're supposed to be there.

⇒ No smoking or open flame in tents, patient areas or around fuel or generators.

⇒ Stay within the boundaries of the MMCF site while on a deployment.

⇒ Follow the buddy system. Find a buddy while preparing to deploy. Learn medical and other info about them so that you can watch for signs of a developing complication to a medical condition early. Watch out for each other and travel in pairs.

⇒ Disasters can occur at any time, weather condition, etc. It is the responsibility of the team member to insure that they have the proper clothing and personal equipment to remain safe and comfortable to do their job and contribute positively to the deployment.

Personal Safety

Even more important than team safety, personal safety is a must! If you would happen to become ill or injured on a deployment, the team will exhaust every effort to see that you get the best care possible and that you're well taken care of. One of the rules of triage during a disaster is that if a rescuer is injured, they are immediately tagged critical (regardless of their true injury) and removed ASAP for definitive care.

Knowing this fact helps you as a rescuer work with piece of mind. Conversely, you should keep in mind that if you become injured, you would require team resources to treat and take care of you. Additionally, your injury or illness may distract other team members. Ultimately, the ability of the MFMT will be diminished because of the resources required to take care of you. Therefore, there are a number of steps you can take to minimize your chance of injury or illness during a deployment:

⇒ Be alert. Look around. If a place or situation doesn't feel OK, leave.

⇒ Keep your vaccinations up to date.

⇒ Don't rush when attempting a task. Give the task your absolute undivided attention. If you are too tired do it later or find someone else to do it for you. When in doubt, nervous, or unfamiliar step back and let someone else who knows how to do the task, do the job.

⇒ During cold weather: Layer clothing, cover exposed skin, keep moving, drink fluids and keep a careful watch for signs of hypothermia and frostbite.

⇒ If eating local food, and only when the team leadership has said it is ok: Avoid raw vegetables, unpeeled fruit, meat, seafood, tap water, ice, and unpasteurized milk and dairy products. Resist the temptation to buy food from street vendors.

⇒ Keep in mind your hydration level at all times. Check the color of your urine. Keep it light yellow. If its dark or amber, you need to be drinking more water. Drink only commercially bottled and sealed beverages or water that has been boiled or treated.

⇒ Attend the training events and educate yourself about disaster response and the team. Increasing your knowledge level and ability is the best method of increasing your safety level during a deployment

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Water, water everywhere....

As already mentioned, a deployment may be the most physically challenging experience you will have. During this deployment, you will be at constant risk of dehydration if you don't pay attention to your body's fluid requirements. The harder your body works, the more heat it generates. This heat is usually dissipated by perspiration, which evaporates and cools your body.

As time goes on, you lose more and more water while cooling yourself and unless replaced, your body loses its efficiency to do work. As you become dehydrated, your ability to work decreases each 5% our body dehydrates (which you can monitor by checking your weight for a 5% loss) decreases your ability to do work by 25%. If you dehydrate too much, you will experience debilitating symptoms and will become a patient yourself.

While you are working, you should be drinking at least 1 quart of water per hour. You should increase this to 1 quart every 1/2 hour when working in a hot climate. A good rule of thumb under average conditions and workloads, a person should drink a bare minimum of one gallon of water per day. An efficient way of checking to see if you are drinking enough water is to monitor the color of your urine. As your body becomes dehydrated, it must excrete a more concentrated urine. This is relayed to you by your urine becoming more amber or dark colored. You should be attempting to take in enough water to keep your urine light yellow colored to clear. As it starts to darken, drink more water in the next hour. When in cold weather, a person may neglect to replace lost body fluid. Even though it is cold outside, you may lose a considerable amount of body fluid. Don't eat snow for water. It may have contaminants that you can't see due to them being embedded in the crystals. Additionally, the process of melting that snow into water as it goes down your throat will lower your body temperature. If you must use snow for water, it should be melted, filtered for coarse contaminants and purified in some way.

Dehydration	Ability to work
0 %	100 %
5 %	75 %
10 %	50 %
15 %	25 %
20 %	0 % (death)

Drinking water... safe or not?

Unless your brought the water with you and you know it has not been contaminated enroute to the disaster site, you should suspect the purity of any water source. Even if that water is provided by local authorities, you should consider it to be contaminated until you have verified it has been tested as drinkable.

When showering, washing and brushing your teeth, consider the source of the water you are using. You can expose yourself to harmful bacteria or other contaminants by these processes just as easily as drinking contaminated water.

The concept that "any" water can be made safe by chlorination is a misconception. Chlorinating potentially contaminated water does not necessarily make it safe due to amoebic cysts. Chlorination will make the water safe in regards to killing disease-causing bacteria such as E. coli.

Filtration is one method of removing these cysts from the water but is sometimes impractical. Boiling to a hard roll for a minimum of 15 seconds will kill these cysts. To purify your drinking water you can follow a number of simple techniques, a combination of the techniques that include filtration or boiling is the best (remember to store your water with 4 drops of household bleach / quart to prevent micro-organism build-up):

1. Filtering: (Decontaminating for microorganisms, removal of coarse particles etc.)

- Allow water to settle for 24 hrs.
- First strain water through layers of cloth to remove the largest particles
- Use a commercial water purifying filter which are readily available at most camping & outfitting stores.

2. Purification tablets - iodine or chlorine (will remove microbes from the water)

- 1 tablet / quart or 4 tablets / gallon water (double amount if water is cloudy)
- Purification tablets have a short shelf life
- 12 drops of 2% tincture of iodine / gallon water

3. Boiling water (removes microbes)

- 1 minute is sufficient for most microorganisms (CDC,1/1/94)
- 10 min. (Spindle/Harrison, 1992)
- Add salt and stir in air to improve taste.

4. Bleach (removes microbes but NOT OK for parasite removal (CDC))

- 6 drops of 5.25% sodium hypochlorite / gallon of water & let stand for 30 minutes repeat if no chlorine smell & let stand 15 minutes
- Must be household bleach with the only active ingredient being 5.25% hypochlorite, no scents or perfumes.
- A minimum of 5 parts per million of chlorine residual is required for field water supplies to be considered drinkable.
- A pool-test kit can be of use for testing the chlorine residual of your water supply.

5. Army Corps of Engineers recommendation

- 1 qt. cloudy water = 4 drops of bleach
- 1 qt. clear water = 2 drops of bleach
- 1 gal. cloudy water = 16 drops of bleach
- 1 gal. clear water = 8 drops of bleach
- 5 gal. cloudy water = 1 tablespoon of bleach
- 5 gal. clear water = 1/2 tablespoon of bleach

6. Distillation (removes microbes, heavy metals, salts, most chemicals, and fallout).

In order to maintain your personal water supply as safe, you should keep your canteen scrupulously clean. When cleaning your canteen, household bleach (5.25% Sodium Hypochlorite) is the best cleaning agent. Fill your canteen half full with water and add one tablespoon of bleach. Fill the canteen the rest of the way and lightly put the cap on the canteen. Let it stand for 5 minutes and then turn it upside-down so that water will slowly drain around the cap and the threads. When empty, wash it with clean anti-bacterial soap and water. Make the water as hot as you can stand to work with. When done, rinse again with clean, hot water and let the canteen air dry or refill it.

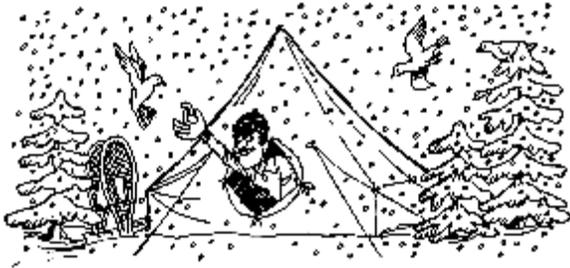
In hot climates, you should allow the canteen cover to get soaked with water when filling it. As the water evaporates from the canteen cover, it will help to cool the water inside somewhat.

Cold Weather Deployments

There are some specific details to keep in mind when you deploy in cold weather. The body attempts to maintain homeostasis. The extremities are used to dissipate heat from the body. When you are hot, your peripheral blood vessels dilate and allow more blood to flow to the skin surfaces allowing for heat loss. When you're cold, these same vessels constrict. This is why your hands and feet get numb when cold and become more vulnerable to frostbite. The biggest loss of body heat (about 55%) is through exposed skin. Your brain needs oxygen to function, so your body can't decrease the blood flow to your head. Consequently, your head and neck are a major source of heat loss. Conduction and convection will also increase heat loss. When you are exposed to cold, wet objects or have tight, wet clothing you can lose up to 15% of your body heat. Evaporation of those wet clothes can supplement that heat loss up to another 21%.

Heat can also be lost from the wind blowing away heat from body surfaces, and to a lesser degree by respiration that can account for up to 9% of your heat loss. Not enough to recommend you stop breathing in cold weather though. It's difficult to appreciate the effect of living 24 hours in the outdoor environment in cold weather. Most of us only experience the mad dash to our car in the early morning to go to work.

Not enough time to really realize the impact on productivity and comfort that living, working and sleeping in those conditions will have on us. Cold weather deployments offer a tremendous challenge to the disaster responders.



One can remember the word COLD to help keep in mind the primary personal objectives of a cold weather deployment. Keep yourself and your clothes Clean, avoid Overheating, wear clothes in Layers, and keep Dry. Additionally, remember that when wearing rain gear, which doesn't breath well and allow perspiration to exit, change your clothes more often. The same goes for your socks when wearing rubber boots. Wear a stocking or other warm hat that covers the ears and neck area. When choosing your clothing for a cold weather deployment, utilize fabrics that maintain their effectiveness when wet. Wool, flannel, cotton and most woven materials are good insulators even when wet. Nylon, plastics and vinyl are poor insulators both wet and dry.

When sleeping in cold environments, make sure your sleeping bag is kept dry. Most synthetic insulating materials lose their properties when wet. Do not sleep with your head under the covers as it will increase the humidity in the bag and make it damp, instead, wear a stocking cap to bed. Insulate yourself from the ground as much as possible, and if on a cot, insulate yourself from the cold area between the cot and the ground. Increase your activity just before bedding down as this will generate more body heat and warm your bag quicker when you climb in. Remove your clothes before bedding down and put on a clean dry pair. In the morning, before you get out of bed, bring your clothes you plan to wear into the bag to warm them and make them more comfortable to put on. Lastly, between deployments, hang your sleeping bag out so the insulation will not be compressed In the heat of the night... warm weather deployments

One should expect that any deployment will grant strong physical demands on a team member. In a warm weather deployment, physical labor increases the potential for heat injuries as well as decreases your overall productivity. Some of the basic tenets to cold weather clothing will hold true with the hot weather environment. Wear loose clothing to allow for maximum cooling and evaporation of perspiration. Remember that evaporation can be your friend in the hot weather environment. Tight clothing prevents perspiration from leaving your clothing. Your clothes should be light colored. Darker clothes will absorb the energy of the sun and increase your body temperature due to conduction with the warm clothes. Cotton and cotton blends are the best fabric for clothing in hot weather. They allow air to pass through them and are absorbent. As you perspire, the clothing absorbs your perspiration. Air currents over the clothing promote evaporation, which will help to cool the body.

You will probably also need to keep in mind some additional survival tips for warm weather deployments. Wear sunscreen and re-apply it often. If you are wearing short sleeves and short pants, wear insect repellent. Wear a hat to protect your head from the sun.

Dark hair can absorb the heat from the sun just as dark clothing would.

Generators, Lighting and Electrical Safety

Portable generators can be hazardous if used improperly. The hazards are: (1) carbon monoxide (CO) poisoning from the toxic engine exhaust and (2) electrocution from connecting the generator to bad a wiring system.

To avoid carbon monoxide (CO) poisoning never use a generator indoors or in tents. Only operate the generator outdoors in a well-ventilated, dry area, away from air intakes to a building, and protected from direct exposure to rain and snow, preferably under a canopy or open shed. A baffle for the noise can be made out of Styrofoam, a table on its side, a tarp over a pallet, etc. Leave the side away from the camp open to allow the generator to remain cool. Most are air-cooled. To avoid electrocution, never plug individual appliances into the generator. Use the power distribution system, which uses heavy-duty outdoor rated cords with a wide wire gauge and a ground fault circuit.

Never plug the generator into a wall outlet. If connecting the generator into the house or building wiring is necessary, have a qualified electrician hook up the standby electrical system, or have the local utility install a linking device if available. Never store gasoline inside. Gasoline, kerosene and other flammable liquids should be stored outside of living areas in properly labeled, non-glass safety containers. The generator and power distribution system are equipped with some safety features to minimize electrocution and overload hazards. These include cord sets with special locking and recessed connectors, electrical boxes with controls for the branch circuits that will receive, and wide gauge feeder cable to connect the generator to the electrical panel. Lastly, be careful not to operate more appliances and equipment than the output rating of the generator.

Be careful not to place the halogen lights too close to the tent material. They get hot over a few hours use and do present a fire hazard. If you must move a light, turn it off first, then move it, then turn it on. This prevents damage to the filament, which can burn out if bumped too much when lit. Unplug lights when changing a bulb.