

Some specific EMP, HEMP, solar flare, CME information and preps:

There is definitely a great deal of incorrect information everywhere on EMP, HEMP, CME, and solar flares.

First, very often a solar flare is shown as an illustration in context with a CME. They are two different events. A solar flare can send streams of energy at nearly the speed of light. That energy, which will begin to arrive in approximately 8 to 9 minutes after it leaves the sun, and will continue for the time the flare lasts, unless the earth passes the point that the flare is traveling. The energy release usually only lasts a few minutes. So, the event is relatively short lived. But the energy can be very intense, creating problems for satellites, and occasionally the power grid that is under the flare. And, at times, the ozone layer.

A CME, on the other hand, is, as the name states, an ejection of coronal mass from the sun. As it is a mass, it does not travel anywhere near the speed of light. It is moving fast though, and can reach earth's orbit in the matter of just a few days, with the larger and more powerful CMEs travelling the fastest and reach earth's orbit the quickest.

And I am saying reaching earth's orbit for a reason. Because it does take many hours for the mass to reach the orbit, the direction in which the CME leaves the sun is important. If it happens to eject toward the earth, the earth will be well past the point where the mass crosses the orbit when it gets there.

Only if the ejection is on a trajectory that is ahead of where the earth is at the time of the ejection, will it impact the earth when the two reach the same point in space at the same time. Since the CME might last for up to hours, it could impact much of the earth as the earth rotates while still in the path of the CME.

Okay, that gets a CME to earth. A CME does, in fact, create an EMP. However, it is not the same as a nuclear induced EMP. Especially a HEMP. While the energy in a CME does excite the electrons in the upper atmosphere, there is not the extremely intense effect that creates the E1 part of an EMP. There is a bit, but not much. There is a bit of E2 component, as well. But the largest problem is the huge, longer lasting E3 part of the pulse.

The E3 component is much longer lasting in the first place, even from a nuclear EMP device, lasting on the order of a couple to several seconds. Add in the fact that a CME,

unlike nuclear EMP or HEMP devices, which are an immediate action, over in a fraction of a second that creates a seconds' long E3 component of an EMP, the CME will be a continuous event that could last for several hours, creating and maintaining an E3 component all that time.

So, instead of a few seconds of activity, it could be minutes or even hours of energy pouring into earth's atmosphere, being picked up and carried by pretty much anything metallic that is linear in shape. Including power lines.

Things not connected to a power line will not be affected much, unless they have a truly long conductor that can pick up the energy directly. The amount of energy that will be induced into power lines will be enough, if it is a large CME on the order approaching that of the Carrington Event or larger, to destroy the actual lines, not just things attached to them. But that will take long enough for most of the things attached to be affected to some degree, up to being destroyed, as well.

Since the majority of computers in use will be attached to a power line, most of them will go down. Vehicles with computers should not be affected except under extremely unlikely circumstances. Radios not connected to the grid might or might not be affected, depending on the length of the antenna, and the severity of the CME. Not likely, but not impossible.

That brings us to the preps for a CME. This assumes, of course, that a really big one hits us. Since the primary effect is going to be the loss of the electrical grid, there will be a vast number of effects resulting from that loss. Pretty much the entire infrastructure of modern society will come to an end, or at least a halt.

There really are not any very specific preps for CMEs that are not already a part of preps for other things. Since the loss of electrical power is one of the things most preppers have made provisions to deal with, that should already be covered. And in the same vein, many of the other effects that EMPs, solar flares, and CMEs produce are also produced by other types of disasters that preppers are already making provisions for.

Even some physical components of the infrastructure will be destroyed in addition to the electrical grid components, due to other effects. Highways would still exist, for example. But they can be damaged or blocked by vehicles that run out of fuel, or damaged if fuel leaks catch fire and burn. Bridges can be blocked in the same way.

Due to lack of electricity, firefighting will be very problematical almost immediately, since there will not be very much water available, since the city water supply pumps will not be working.

The more fires, the more they will spread, and this is likely to make some transportation avenues unusable.

Lots of other pumps will not be operating, either. Besides water, sewage is usually handled with electrical pumps. Fuel is pumped with electrical pumps. Since these things can happen for other reasons, most preppers have plans in place to deal with them.

All those listed should be routine for preppers. There are, however, a few preps that apply to EMPs, solar flares, and CMEs that are not that common to other events.

The CME could affect the magnetosphere, distorting it for a short period. It is not likely to destroy it. But, because the magnetosphere is weakening now due to factors within the earth, if the CME happens at a time when the magnetosphere is already extremely weak, the amount of energy reaching the earth could be much higher than it would be right now. Or would have been in the past.

And not only would a CME of any size be worse due to a weakened magnetosphere, so would the effects of a solar flare. And simply the normal levels of radiation coming from the sun and other space based objects, exposure to hard radiation, as well as various UV bands could result in not only serious sunburns, eye problems, and future cancers, but the loss of crops and food animals.

If the magnetosphere continues to weaken, as it seems to be doing, a future CME of significant strength and duration, could result in enough destruction to result in a post-apocalyptic world situation. Certainly not an absolute, but when it comes to preps for a CME, your basic PAW preps just might be needed, and thus should be considered.

One of the other effects that are likely with EMP, solar flares, and CMEs is potential damage to the ozone layer. Holes, such as have occurred before, could be created, and/or the layer could be reduced in thickness from a bit to a bunch.

This is a real danger and can be a major disaster in itself. The ozone layer helps protect the Earth's surface from hard radiation, along with the magnetosphere. What

this means is that a hole develops over inhabited areas, or the overall layer gets really thin, that additional radiation getting through will have from minor to serious effects on humans, animals, and plants.

Not only will there be mutations because of the radiation, the higher levels of the UV spectrum of light will cause sunburns of humans, animals, and plants, as well as eye damage. Humans can wear wide brim hats, UV protective glasses, sunscreen, long sleeves, long pants, and full coverage shoes to protect themselves from this type of radiation.

Other than keeping animals under some type of roofed enclosure, or keeping them inside and letting them out only at night, there is not much that can be done for them. Same thing for food crops. The only thing I know to do to reduce the level of damage is to use sun screening systems, probably with a misting system to not only block some of the intense sunlight, but to cool things down enough to compensate for the heat gain the more intense sunlight will cause.

Expect to become somewhat nocturnal to avoid the higher levels of ionizing radiation and UVA/UVB/UVC radiation. Apply 30SPF sun blocker, wear a wide brimmed hat, UVA/UVB blocking glasses, long sleeves, long pants, full coverage shoes, and gloves if you must be outside during daylight hours.

Because UVC is currently being blocked almost completely by the atmosphere, there are not too many protective items available for it. It may or may not be a factor. But I do intend to look for protective glass that include UVC protection as well as UVA and UVB.

Some additional recommendations:

1. It would be a good idea to have some sun blocking, and even hard radiation blocking, overhead shelters in the area, in case people are caught out and cannot get to other shelter during the day, especially when the sun is high in the sky.

2. I cannot stress enough that once well into the PAW, you will not be able to resupply much of anything from outside sources. So, having equipment that will last, with plenty of repair parts, the tools to make the repairs, and the knowledge (even if just the manuals or instruction books) to do the repairs, is just as important as having the means to resupply yourself consumables that will not be otherwise available. Literally

everything must be considered and a determination on how to do without something, substitute something else, be able to make it or the substitute, or have some other way to provide for the need the item fills, is vitally important.

3. Do not forget that there will likely be more down time when people will not be able to be outside. You will need some open space so people can get away from each other, do medium to large projects in protected space, and be able to entertain and/or occupy themselves from time to time. Having a stock of movies, music, stout versions of board games, craft projects, a karaoke system, musical instruments, a huge library, and such will help keep people from developing bad habits that affect other people adversely.

4. Also do not forget that the results of the effects from EMPs, solar flares, or CMEs might wind up being trigger events for many other really bad things that can happen.

There are probably some other things that might need to be done that have not occurred to me. If anyone things of any, please post them up.

Just my opinion.