Common misconceptions –for EMP -- Source:
https://en.wikipedia.org/wiki/Nuclear_electromagnetic_pulse

A **2010 technical report** written for the US government's Oak Ridge National Laboratory included a brief section addressing common EMP myths.[43] The remainder of this section is a direct quotation from that Oak Ridge report regarding common HEMP Myths:

Much of the literature on HEMP is either classified or not easily accessible. Probably because of this, some of what is openly available tends to vary in accuracy – some, especially from the Internet, has major inaccuracies. Some discussions of HEMP have the right words and concepts, but do not quite have them put together right, or have inaccurate interpretations. Here we will discuss some common misunderstandings. HEMP has also appeared in some movies, and there are on-line discussions about possible errors in their depiction of HEMP. Here we will be concerned with E1 HEMP, and ignore misunderstandings about other types of EMP.

Extremists: Some general emphasis of comments fall into either "the world as we know it will come to an end" if there is a high altitude nuclear burst, or the other extreme: "it's not a big deal, nothing much will happen". Since we really have never had a nuclear burst over anything like our current modern infrastructure, no one really knows for sure what would happen, but both extremes are not very believable.

Yield: There appears to be an assumption that yield is important – it is not for E1. The assumption that E1 is an issue only for cold war type situations, but not for terrorists or rogue nations, is false. Very big bombs might have better area coverage of high fields by going to higher burst heights, but for peak fields the burst yield is only a very minor consideration.

1962 experience: Some point to the Starfish event, and the rather minor HEMP effects produced at Hawaii by it. However, there are many problems with extrapolating that experience:

1. That was about half a century ago. Since then, the use of electronics has increased greatly, and the type of sensitive electronics we currently use did not really exist back then.
2. The burst was fairly far away from Hawaii, and the incident E1 HEMP was much less than worst case.
3. The island is small – if over the continental U.S., long transmission lines would be exposed (especially an issue for late-time HEMP). In addition, widely separated substations would have been exposed, although with electromechanical relays (not solid state). Also the yield argument has been used – Starfish was a very big weapon, yet it did very little – see the previous item, yield is not really very significant.

Cars dying: Some say that all vehicles traveling will come to a halt, with all modern vehicles damaged because of their use of modern electronics (and one movie even had a bulk, non-electronic part dying). Most likely there will be some vehicles affected, but probably just a small fraction of them (although this could create traffic jams in large cities). A car does not have very long cabling to act as antennas, and there is some protection from metallic construction. As non-metallic materials are used more and more in the future to decrease weight and increase fuel efficiency, this advantage may disappear.

Wristwatch dying: One movie critic pointed out that electronics in a helicopter were affected, but not the star's electronic watch. A watch is much too small for HEMP to affect it.
Electrons present: One critic, with some awareness of the generation process, said that HEMP could not be present unless there were also energetic electrons present. This is true when one is within the source region, which exists for all types of EMP – there are energetic electrons present. However for the HEMP, the radiation and energetic electrons are present at altitudes of 20 to 40 km, not at the ground.
Turn equipment off: There is truth to this recommendation (if there were a way to know that a burst was about to happen). Equipment is more vulnerable if it is operating, because some failure modes involving E1 HEMP trigger the system's energy to damage itself. However, damage can also happen, but not as easily, to systems that are turned off.
Maximum conductor length: There is a suggestion that equipment will be OK if all connected conductors are less than a specific length. Certainly shorter lengths are generally better, but there is no magic length value, with shorter always being better and longer not. Coupling is much too complex for such a blanket statement – instead it should be "the shorter the better, in general". (There can be exceptions, such as resonance effects, which depend on line lengths.)
Stay away from metal: There is a recommendation to be some distance away from any metal when a HEMP event occurs (assuming there was warning), because very high voltages could be generated. Metal can collect E1 HEMP energy, and easily generate high voltages. However, the "skin effect" (a term not really derived from the skin of humans or any other animal) means that if a human were touching a large "antenna" during an E1 HEMP event, any current flow would not penetrate into the body. Generally E1 HEMP is considered harmless for human bodies.

Protecting infrastructure[edit]

In 2013, the U.S. House of Representatives considered the "Secure High-voltage Infrastructure for Electricity from Lethal Damage Act" that would allow the Federal Energy Regulatory Commission to order emergency measures to provide surge protection for some 300 large transformers around the country.[44] The bill was introduced and referred to committee, but proceeded no further.[45]

The problem of protecting civilian infrastructure from electromagnetic pulse has also been intensively studied throughout the European Union, and in particular by the United Kingdom.[46][47]