

75 OBSOLETE ITEMS THAT WILL BECOME AGAIN INDISPENSABLE



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Introduction



During the Cold War everyone's greatest fear was of the carnage that would be caused by a thermonuclear war. That danger hasn't gone away, but it's certainly subsided. Of the four countries capable of launching a major nuclear attack on the USA, two – the UK and France – are allies. China is too locked into the US economy to contemplate a war, and while Russia is the only potential opponent that has the nuclear firepower to destroy the USA, they know that the retaliatory strike would destroy *them* just as thoroughly. The risk of a major nuclear war is as low as it's been any time since the 1950s.

Unfortunately, there are other ways to use a nuclear weapon, and some of *those* risks have increased sharply. Nuclear terrorism is one of the current nightmare scenarios – just imagine the devastation if extremists managed to smuggle a nuclear weapon into a major city and set it off. Luckily, it's still not easy to make a nuclear weapon, and even harder to get hold of a working one. There was a scary period in the mid-1990s, as the wreckage of the USSR collapsed and nobody was quite sure where all its warheads had gone, but that risk is over now. A nuclear terror attack *could* happen, but it's still not very likely.

The *real* risk is an intermediate-level attack – something that's too big for a terrorist group to pull off, but still short of full-scale nuclear war. This is much more likely to happen, because a rogue state might just think it could get away with it. And, if they're smart about how they set up and carry out the attack, they could even be right. The scenario that gives an attacker the best chance of getting away with it is an EMP attack.

Even the craziest dictator knows that if he launches an ICBM at an American city there's going to be a counterstrike that will incinerate his country. It's impossible to win a nuclear exchange with the USA; unless you're Russia, in which case you can expect a messy draw, the only question is how badly you're going to lose. Dictators don't want to lose,

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because even if they survive the counterstrike the chances are they're going to be killed by the remains of their own people. That means they'll do everything they can to avoid retaliation.

An EMP weapon is probably the best chance anyone has of hitting the USA and getting away with it. For starters, you don't need many weapons. There's no way to hide where a full-scale strike is coming from, but if you only need to launch three or four missiles to cripple most of the country, that's a lot easier. A handful of SCUD missiles fired from hijacked cargo ships off the coasts would do the job. It could take a long time before the government could be sure who was to blame. They might never know.

Even if the USA *did* find out who was responsible, it might be politically difficult to launch a nuclear strike in retaliation. After all, an EMP wouldn't directly kill anyone – the weapons would go off far too high for any physical effects to reach the ground. They wouldn't explode on US soil, or even in US airspace; national airspace extends to a height of 50 miles, but EMP weapons detonate 300 miles up or even higher. Legally, an EMP going off 350 miles above the USA wouldn't be an attack. It would violate treaties about nuclear weapons in space, but that's about all.

Because space doesn't belong to any country, there's a lot of potential to create confusion. What if the attacker claimed they'd just launched a nuclear-powered satellite and something had gone wrong? It's not likely anyone would really believe them, but it might just create enough doubt to deter a US response.

There's one final reason the USA might not fire back after an EMP attack – it could be impossible. The US nuclear arsenal is the most secure in the world, with multiple layers of fail-safe systems built in. Every missile silo, every Trident submarine and every strategic bomber is fitted with a Permissive Action Link. Unless the PAL is unlocked with a code sent out by the commander in chief, the strategic units can't launch their weapons or even arm the warheads – the arming and firing circuits are all routed through the PAL, and until the right code is entered none of them will work.

Fail-safe means exactly what it sounds like – if the USA's strategic command systems fail, it defaults to the safe option. Britain and Russia are vaguer about how their nuclear forces operate, but both have hinted that

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they might have a fail-*deadly* system. American missile submarines will only launch if they get an authenticated message telling them to do it; British and Russian ones might fire if their commanders stop telling them *not* to. That makes attacking them a gamble; even the most successful surprise attack could trigger a nuclear response. But a surprise attack on a fail-safe system *can* prevent retaliation, and an EMP is one way to do that.

The US fail-safe system relies on a lot of electronics, from the computers and radios that send out the unlock codes to the PAL itself. Most of those electronics have been tested against simulated EMP, but there's no guarantee they'll survive a *real* one – and if they don't, the USA can't launch any nuclear weapons. It would take weeks, maybe months, to modify the warheads to activate without an active PAL, and who knows what the enemy would do in that time?

So an EMP attack is attractive because it's deniable and there's a good chance of getting away with it, but also because it has the potential to cause huge destruction. EMP has been understood since early in the atomic age but it was always seen as a minor effect of nuclear weapons – a nuisance, but not as important as heat and blast. Most military equipment built before about 1993 was hardened against EMP, usually by using older or simpler technology where possible and protecting everything else inside Faraday cages. The rest of society was on its own, but it could survive pretty well anyway.

If the USA had been hit with an EMP attack in the last years of the Cold War it would have been bad news, for sure, but not a disaster. TVs and entertainment systems would have been wiped out, but essential utilities were robust enough to cope. A big EMP can bring down power lines but most power stations could have been brought back on line by resetting a few circuit breakers. Cars would have kept running, and most businesses weren't computerized enough to be severely damaged. The country would have survived.

Just imagine the consequences now. Most of our data is stored on computer, and nowhere else. Your bank doesn't have a paper record of how much money's in your account, and its computers aren't hardened against EMP. Neither are your doctor's, and he probably doesn't have paper records either. All your utilities rely on computerized control systems, and they're not hardened either. Even stop lights rely on computers to run –

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but that doesn't matter much, because the engine management systems in any modern car will be fried by the pulse.

Our society and economy could have survived an EMP attack in 1990, but they can't now. If someone can fire three or four nuclear warheads at high altitude over the USA, everything is going to crash. The power will go off; for most people, the water will go off. The phones will stop working and the internet will be history. And, very soon, people are going to start dying.

Faraday cages will protect some systems against EMP; you should be able to preserve some radios, and maybe enough parts to keep a vehicle running. Most of the technology will be gone, though, and that's going to have a huge impact. To survive you'll need to be able to cope in a world without electronics, a world mostly without electricity itself – a world where most of the modern things you've accumulated up are just paperweights.

After an EMP people are going to have two choices. Revert to using older possessions (and the skills they need), or degenerate into squalor and starvation. The thing is, getting by without electronic gadgets isn't that difficult if you have alternatives to fall back on. Until three generations ago *nobody* relied on electronic devices, and even a couple of decades back we depended on them much less than we do today. The good news for pack rats is that lots of old stuff you didn't want to throw out will be useful again when the technology dies.

In fact a good rule to follow is that, when you get the latest gadget, don't throw away whatever it's replacing. Instead clean it, fix any issues, grease it if it's metal, and store it in a safe place with all its accessories. That makes sense in everyday life – you'll have a replacement if the new one breaks. But it can also help you evade the worst effects of an EMP. Even electronic items have more chance of survival if they're powered off and unplugged; simple electrics are even more likely to make it, and non-electric stuff won't be affected at all.

An EMP attack will send the target area back decades in the space of a couple of a few seconds. The 21st century and all its appliances and information superhighways will be gone. You can go back to older technology, or you can do without. Here are 75 obsolete items that will get a new lease of life after the attack.



1. Wood-burning range

Your kitchen stove is one of the most important items in your whole house, but unless it runs on bottled gas, after an EMP it's going to stop working. For most people that's going to be a disaster; if you have an old wood-burning range around, you'll be fine.

A century ago most homes had a solid-fuel kitchen range. This was the ancestor of the modern Aga or Rayburn, and burned wood or coal. A good range had hotplates on top and at least one oven – often separate baking and roasting ovens. Many of them also had a heat exchanger to heat water. The range was the home's life support system, providing cooking, central heating and hot water.

Solid fuel ranges don't let you adjust cooking temperatures like a gas or electric one does. They also take their time to heat water, can burn a lot of fuel and need regular cleaning. On the other hand they're immune to EMP – and just about anything else short of a determined assault with a sledgehammer. Look for them at house clearances, scrapyards and salvage dealers. They're basically huge chunks of cast iron, so even a badly rusted specimen can be cleaned up and restored.

2. Wood stove

If you can't use your range to power central heating you're going to need some other way to keep your home warm. Wood stoves are a great option. The fuel is cheap, the stoves are simple to maintain, and they do a great job of heating a room in winter. Wood stoves often get thrown away during renovations of older houses, so check out builders' dumpsters in likely spots. If you prefer a new one, plenty of wood stoves are still being made.

3. Rotisserie spit

A couple of centuries ago, most kitchens had a spit mounted over an open fire. That was the most common way of cooking meat for thousands of years. You can easily build one out of steel bars, and mount it on any open fire – even outdoors.



4.Swing trivet

Why light a stove to boil water if you already have an open fire going? A swing trivet is a hinged support that can be stored against the wall or swung out over the flames. There's a hook on the end that you can hang a kettle – or a Dutch oven with a handle – from.

5.Maps

When did you last use a map to find your way around? Twenty years ago GPS was an expensive novelty, used by the military and offshore sailors. Now it's everywhere. Most modern cell phones have a built-in GPS chip, and dedicated hand-held devices are rugged, accurate and cheap enough for any hunter or outdoor enthusiast to own. It's never been easier to navigate with pinpoint accuracy – but that's going to change the moment an EMP goes off. The satellites are safe; they're 12,000 miles up, far beyond the reach of the weapon. But all the receivers have antennas that can pick up the faint electromagnetic signals from those distant satellites. When they're suddenly hammered by the much stronger pulse of an EMP, their electronics will be instantly fried. A few hardened military systems will survive, but none of yours will. Store any maps you have – everything from road atlases to tourist maps to USGS topo sheets.

6.Compass

A map isn't a lot of use without a compass. Your smartphone probably has a compass function, but that probably runs on GPS and *definitely* relies on electronics. It's going to get fried. Make sure you have a proper compass – at minimum a Silva, and ideally a military-style lensatic or prismatic one – and know how to use it.

7.That old truck

If you're replacing an old vehicle, consider hanging on to it. If it's old enough there's a good chance it's going to be EMP-resistant. Anything with electronic engine management will be instantly immobilized by an electromagnetic pulse, but old-style engines are a lot tougher. Something



like an early 1980s Toyota Hilux is sturdy, it has good cross-country performance and it can be picked up cheaply. It also has an excellent chance of surviving an EMP, especially if you take the distributor wiring out and store it in a Faraday cage until it's needed.

8. Bicycles

There's no shortage of bikes around, but for most people they're a hobby or fitness aid. With most vehicles immobilized by electromagnetic damage, they'll become a vital tool for getting around beyond easy walking distance.

9. Landline phones

The landline phone system is actually pretty resilient. An EMP will destroy all the modern add-ons to it, but a lot of the basic infrastructure will survive. What isn't going to survive is modern phones with sophisticated electronics. Anything cordless, or with an internal memory, will be killed off by the pulse. If you have an old-style phone, however, that's much more robust. A dial model is best, but even a basic push-button phone is likely to keep working. If your friends and family in the local area also have old phones you'll be able to keep in touch.

10. Old-school flashlights

Modern LED flashlights are awesome; they're powerful, have a long battery life and many even have SOS or strobe modes. Unfortunately they rely on electronics, so they probably won't make it through an EMP. When you buy one, hang on to your old Maglite or GI right-angle flashlight. They're just batteries, bulbs and a mechanical switch, so they're practically immune to EMP. They might not have all the advanced features of a newer model, but they'll still be working.



11. Hurricane lanterns

Most outdoor people have at least one lantern hanging around somewhere. Whether it's a blue gas one, a Coleman or an old-style paraffin lantern, they're great sources of light when you're working outside. Like flashlights, though, they're being replaced by modern LED models. LED lanterns are excellent; they're much brighter than the old ones, the batteries last for days and there's no fire hazard. On the down side they're just as vulnerable to EMP as their smaller flashlight relatives. A real lantern that burns fuel isn't, so don't throw them away – clean and store them, and make sure you have a supply of fuel for them too.

12. Light bulbs

While we're talking about LED lighting, what do you have in your house these days? LED bulbs have become very popular; they're a lot cheaper to run than the old incandescent ones, and their light is a lot more pleasant than compact fluorescents. Many people have also started using smart home technology, that lets you control Wi-Fi-enabled LED bulbs from a device like Amazon's Echo or even through a smartphone app. But guess what's going to happen to all this technology when an EMP goes off? Yep, you got it. You might have a generator to power your home off the grid, but that won't help if all your bulbs have been fried. Keep a supply of old ones – ideally in a Faraday cage; a really strong EMP can set up currents in the filaments and destroy them.

13. Candles

In the worst case you'll have no home power at all. You can use lanterns indoors, but some kinds release dangerous carbon monoxide and they all burn fuel. If you need intense light then a Coleman or gas lantern is your only non-electric option, but for generally lighting the house candles are excellent. They're cheap, durable and don't take much storage space. Keep a few boxes in your emergency supplies.



14. Candle sticks

Put the candles in them; they're less likely to fall over and set things on fire.

15. Candle snuffer

Candles are easy to blow out – but it takes a surprising amount of effort (and puff) if you have a couple of dozen of them around the house. A candle snuffer is much quicker and easier.

16. Adding machine

If you run a business, and plan to get it running again after an attack, you're going to need some way to keep track of stock, cashflow and all the other numbers. Unfortunately, your computers and calculators will all be scrap. An old mechanical adding machine will give you a head start on competitors who're doing it all with paper and pen.

17. Kerosene heater

Wood stoves and open fires are excellent at heating a room – but most homes don't have one in *every* room. Kerosene heaters are low-tech, cheap to run, and very effective. Some people don't like them because of the smell, but there's a simple trick to avoid that. The smell is caused by unburned kerosene vaporized in the first few seconds after you light it; when it's burning properly it's odorless. Take it outside, fill it, light it and let it burn for a minute. Then take it back in to where it's needed.

18. Wash board

Modern washing machines are computerized, and vulnerable to EMP. Their metal casing *might* act as a Faraday cage to protect it, but it probably won't. Older machines are less vulnerable – but they're not much use if the

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power goes out. Even if you have your own generator a washing machine uses a lot of juice. Hand-washing is the way ahead.

Unfortunately, hand washing in the sink is fine for your good jeans, but it's pretty hard work getting outdoor clothes clean. A washboard will make it much easier. If you don't have an old one sitting in an outhouse check ebay – you can find plastic ones for under \$10 - or local junk shops.

19. Wash tub

An old-fashioned washtub will give you plenty of room to let your clothes soak as you wash them. You can use a wash board in the sink, too, but a tub is more spacious and makes the job a lot easier.

20. Hand cranked washing machine

There are alternatives to a wash board and tub. Some early washing machines were electric; others were hand-cranked. You just loaded in your washing, water and detergent, closed the barrel and started turning the handle. Washing a full load would give you a good upper body workout, but it did get your clothes clean without needing electricity or anything else an EMP might wreck.

Antique washing machines don't survive as well as some other home appliances, but there are modern versions available. These are much easier to use, too, because their drums are lightweight plastic instead of metal or wood. You can find them on Amazon or eBay for less than \$50.

21. Wringer

Hand-washed clothes come out the tub with a lot of water in them, so they take much longer to dry than machine-washed ones. In cold weather, if you're drying them indoors, they also saturate the air, causing condensation and making your home damp. Speed things up by running them through a wringer. This is a simple device – just two rollers powered by a hand crank – but it will do a great job of squeezing excess water out.



Most wringers clamp to the edges of a table or counter, and have a channel to direct water into the tub below. Like wash boards and tubs, you can often find them in junk shops or on ebay. A lot of them have been cleaned up and used as decorative antiques, so check they actually still work and the rollers are in good condition – damaged rollers will be less efficient, and can even damage your clothes.

22. Washing line

When you take your clothes out the washing machine you probably throw them in the dryer. Maybe you even have a combined washer/dryer that does it all in one cycle. After an EMP attack you won't have. You'll be drying clothes the old-fashioned way – hanging them on the line.

23. Clothes dryer

Obviously, a washing line isn't a lot of good if it's raining or freezing outside. You'll have to hang your clothes up indoors, and unless you're into stringing lines from the coat hooks that means you'll need a clothes dryer. Many old houses had one that hung from the ceiling and could be pulled up out of the way with a rope; more modern ones are metal racks that fold up when you're not using them.

24. Copper

If there's no power, where are you going to get the hot water to wash your clothes in? You'll need a good few gallons to fill a wash tub, and if you're relying on the water supply from the kitchen range you're going to struggle. That's where a copper comes in. A copper is just a big metal bucket (an old steel trash can will do) built into a brick structure with a firebox at the bottom. A small fire, burning for a few hours, will give you plenty water for your clothes, and a wooden lid keeps the heat in. Very dirty clothes could be soaked in the copper for a while before transferring to the wash tub.

A copper is also good on bath day.



25. Tin bath

Built-in baths with plumbing are a fairly recent luxury for most people. Apart from the rich, up to the mid-20th century most people took their baths in a steel tub that was stored out of the way most of the time. It would be filled with water heated on the stove, or in the copper if they had one. After bathing the dirty water would be tipped down a drain.

26. Bed warmer

Most of us can sleep pretty comfortably even on the coldest winter night, thanks to modern heating and electric blankets. Modern heating systems are computerized, though, so they'll be casualties of an EMP – and while your electric blanket is simple enough to survive, that won't help if the power is out. There are older solutions that will get your bed nice and toasty, though. A hot water bottle is surprisingly effective – and so are those brass bed-warming pans that some people hang on the wall as decoration. Anything that can be filled with something hot, whether it's water or hot ash from the stove, will warm your bed and drive out any dampness.

27. Camera

Who remembers the “Kodak moment” ads? The giant film company had their own Kodak moment when they decided digital cameras were never going to catch on with the public. Now everyone has a high-resolution video and stills camera built into their phone, and Kodak is a small business specializing in business document storage. Just remember that an EMP will kill every digital camera and wipe all their images; if you need a camera after the attack, make sure you have an old 35mm somewhere and a stash of film in the refrigerator. Even a sophisticated 35mm SLR camera will work after an EMP; its advanced electronic features won't, but the optics and shutter will be fine. Disposable cameras are good too, if you can find them.



28. Developing kit

It isn't hard to develop your own photographs; you just need the right chemicals and some basic tools.

29. Photo album

Electronic photo frames are impressive – who wouldn't love a slideshow that automatically runs through all your favorite pics? If you want your photos to survive an EMP attack, however, you better forget digital and keep them in a proper photo album.

30. Window screens

If you want to keep your house cool in summer you turn on the air conditioning. EMP will kill your air conditioning, so you're going to have to open the windows. Then flies will come in. Window screens will stop them.

31. Can opener

The electric can opener is a very American gadget, a symbol of just how advanced and wealthy the country became during the post-War economic miracle. Today you can get appliances that do just about anything, even as simple a task as opening a can. As long as the power's on, of course. If you have an electric can opener make sure you have a manual one as a backup, otherwise eating that three-month supply of canned food is going to be a bit of a pain. Even a military P-38 will do, but a proper rotary one is much easier to use.

32. Mechanical clocks

Even if you don't need to know exactly what time it is, you *do* need to be able to track how much time has passed. Cooking and baking are a lot more difficult if you don't know how long something's been in the oven. The



problem is that most modern clocks will stop dead the moment an EMP goes off. Hang on to any old mechanical clocks; they're immune to the effects. Keep at least one wound and running. If an EMP goes off in the middle of the night you could wake up to find all the modern clocks are dead, and you don't know what time it is.

33. Alarm clock

Now you know what time it is, but you probably also need to know that it's time to wake up. Most of us use our phones as alarms, but a wind-up alarm clock with bells and a clapper on top is much better at surviving asymmetric nuclear warfare.

34. Mechanical watch

For the same reason as your old clock will come into its own after an EMP, keep any old mechanical watches that are still in running order, too.

35. Rolodex

Most records are on computer now. Computers don't like EMP. Card indexes don't care.

36. Gas-powered refrigerator

Just about every refrigerator sold today is electric, and in the USA most of them also have sophisticated circuitry that warns of open doors and lets you set temperatures accurately. However, when refrigerators were a new technology many of them weren't electric at all – they were powered by propane or natural gas. Gas-powered fridges are still made in small numbers (they're popular at hunting lodges and lumber camps, where there often isn't electricity) but for domestic use they're obsolete. Until there's an EMP attack, of course. Almost every modern electric fridge will be destroyed by the pulse; a gas one won't even notice it. Having a fridge



is useful if you want to keep food fresh in summer, and vital if you have medication that needs to be kept cold.

37. Ice box

Not everyone could afford a gas-powered refrigerator; in fact, until the late 1940s most homes still relied on the older alternative – the ice box. This is about the simplest refrigeration device you can think of – an insulated cabinet with a rack at the top to hold a block of ice. Air chilled by the ice sank down through the food stored below; as it warmed, it rose back to the ice to be chilled again. Meanwhile the hollow walls, stuffed with sawdust, straw or cork, minimized the amount of heat that got into the icebox.

You've probably spotted a problem – for an icebox to work, you need a supply of ice. If an EMP goes off in summer it isn't going to help you much. On the other hand, an EMP would be most destructive in winter, so that's the most likely time for it to happen. If it does, start storing ice. Put out buckets of water, break up the ice on ponds and rivers, pack snow into boxes and ram it down hard. Collect as much ice as you can. Then insulate it with sawdust or straw and store it in your basement or root cellar. Make sure any meltwater goes into a drain or drip tray.

You might not think ice will last for long, but in the 19th and early 20th century it was a huge industry. New England ice companies cut blocks from ponds all winter, and the rest of the year they kept the fishing fleet supplied with ice to preserve their catches. Every big town had an ice man who would deliver blocks to your door. It was even possible to send ice from New England to India by sailing ship, in sawdust-packed holds, and sell it at a profit. If you put some work into it, you can store enough ice to last you through the year until winter comes again.

38. Books

OK, these aren't *exactly* obsolete, but eBooks have certainly taken a big share of the market. They're cheaper, you can store thousands of them on a small device, and almost all portable electronics now have the ability to display them. They're also going to disappear when an EMP hits – the

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electronics that display them will be fried, and the files themselves will probably be corrupted or wiped. That doesn't happen to physical books.

Books aren't just good for entertainment; they're also stores of knowledge. Any books on medicine or other practical skills should be kept on old-fashioned paper, because they're guaranteed to be there when you need them.

39. Encyclopedia

Yes, they're books, but encyclopedias are useful enough to deserve their own mention. They're how people found stuff out before Wikipedia, and they'll survive when nuclear warheads have turned Wiki into a memory. They're also more likely to be accurate, which is another good reason to have one.

40. Typewriter

Most of us have to write stuff occasionally, and generally we do that in Microsoft Word. What if you didn't have a working computer to run Word on? Then you need a typewriter – a manual one. Antique typewriters are getting expensive, because they're decorative and crafters love to make things out of the keys, but you can pick up a less exotic one for under \$50.

41. Correction fluid

Typewriters are more robust than word processing apps, but they don't let you fix typos with a click of your mouse. You're going to have to roll the page up, brush on some Wite-Out then find something else to do while it dries.

42. Phonograph

An EMP means you can say goodbye to any music collection put together in about the last 35 years. Most tape players, and all CD players, will be

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destroyed by the pulse; the media for them will be fine, but unless you protect it in a Faraday cage the hardware will be toast. As for MP3s and other digital media, it's definitely not going to make it.

Luckily there's an alternative – find yourself an antique phonograph. These have been around since the 1870s, and by the 1920s they were using the 7-inch and 12-inch disks that are still standard, at the familiar 33 $\frac{1}{3}$, 45 and 78 rpm speeds. Electric models started to appear about the same time, but most of them were purely mechanical; you cranked them up to wind the spring, put the needle on the record and sat back to listen. Phonographs were a luxury item before WWII, but there are still plenty left and they don't cost that much, even in good working order. Look on ebay or local antique shops. There are also some working modern reproductions.

43. Travel robes

Central heating is great. You can keep your house at a comfortable temperature, and sit around in short sleeves on the coldest days. Life hasn't always been like that, though. A century ago, when people sat reading or socializing on a cold night they'd cover themselves in woolen "travel robes" – blankets that could also be used to stay warm in a cold horse-drawn carriage. When EMP has destroyed your furnace, you'll be grateful for a few woolen or fleece blankets to wrap up with.

44. Fly paper

Your electric insect zapper won't work without power, and chasing flies with a swatter is hard work. Hang up some old-style fly paper (traditional hardware shops often have a dusty box of it somewhere) and the problem will take care of itself.

45. Charcoal iron

Ironing your clothes isn't essential, but it does make you look and feel better. If you use cotton or linen bedsheets they'll also be more

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comfortable if you take the wrinkles out before using them. But how do you iron anything when the power lines have collapsed under EMP-induced thermal stress?

Again, our ancestors had to cope with this every day – and they did it by using an iron. They just weren't electric ones. A charcoal iron's baseplate had the same familiar shape as a modern iron, but above that was a heavy iron box that could be filled with hot embers from the fire. A thick lid with a wooden handle protected your hand from the hot coals.

A charcoal iron didn't heat up quickly – there was a lot of metal in it – but once it was hot it stayed that way for a long time. To get the temperature up, fill it with charcoal that's well alight or red coals from the heart of your fire.

46. Flat irons

A charcoal iron wasn't the only option; many people preferred flat irons. Again these had a thick iron plate in the usual shape, but with the handle bolted straight onto it. They are heated directly on a fire or stove; when they're hot enough you simply pick it up and use it. Flat irons cool down quite quickly, though, so you need a few of them – two or three heating while you use one.

47. Playing cards

A few games of Solitaire on the PC is always a good way to pass some time – until your computer's innards are fried by a high-level nuclear detonation. If you keep a spare laptop in a Faraday cage you'll still have Solitaire, but you can forget online poker games – they won't be back for a long time. Luckily there's a hardware-only backup – get a couple of packs of cards.

48. Egg beater

What happens when you need to whisk something in the kitchen but there's no electricity? Using a fork is fine for scrambling a couple of eggs,



but if you're mixing a batch of pancake batter it gets old in a hurry. A wire whisk will work, but it can be messy. An alternative is an egg beater with a crank. Two interlocking whisks will beat eggs, batter or cream more effectively than a simple whisk.

49. Egg timer

Of course you can just boil your eggs, but how do you know when they're done? An egg timer will sort that out for you. Clockwork ones will keep working until the spring wears out. Sand-filled glass ones will keep working forever.

50. Fire screen

After an EMP, a lot of people will be reopening fireplaces that have been blocked up for years. Why were they blocked? Because when a fire isn't lit, wind across the chimney sucks air out of the house – and cold drafts rush in to replace it. A fire screen across the front of unlit fires prevents that.

51. Notebook

It's never been easier to make notes and memos as you go about your business; just tap it into your phone, or record a voice memo to yourself. Before portable electronics you had to scribble it down in a notebook. After an electromagnetic pulse you'll be doing that again.

52. Meat grinder

It's easy to make your own ground meat with a food processor, and even quite entertaining to watch the blades chop it up. That needs power, though, and even if you have a generator there's a good chance an EMP will burn out the coils in the motor. A cast iron meat grinder with a hand crank won't just survive an EMP; it will even survive a direct nuclear attack that isn't actually close enough to vaporize it.



53. Coffee pot

Modern coffee makers are awesome, whether it's a simple percolator or a \$1,000 super-machine that can produce espresso, latte and cappuccino at the press of a button. Of course, without electricity they're useless. If you want to continue getting your caffeine intake post-EMP, you'll need a less sophisticated solution.

A coffee pot or French press will make coffee as long as you can boil water. Americans are lucky here; stovetop kettles are still common. If an EMP hits Britain their whole civilization will collapse, because they all have electric kettles and they won't be able to make tea anymore.

54. Board games

Most of our entertainment is delivered through some kind of screen these days. After an EMP the screens will all stop working. You can spend your free time bored, or you can dig up a couple of classic board games and entertain yourselves that way.

55. Sewing machine

In the economic collapse that would follow an EMP, it's going to be impossible to buy new clothes for a long time. You're going to have to rely on repairing, altering and repurposing the ones you already have. Hand sewing is a slow process, though, and unless you're very skilled the results don't look good. Take the effort out of it with a sewing machine.

Before electric motors became affordable there were two ways to power a sewing machine. High-end models had a treadle that could be pumped with a foot to spin a flywheel; a belt carried the power from the flywheel to the machine. Cheaper ones had a crank that had to be turned with one hand as you fed the work through the machine with the other. Both kinds show up at antique shops and on ebay, because they're popular decorative items – but most of them still work. Neither kind is as efficient as a modern electric machine – but they're both miles ahead of hand-sewing.



56. Safety razor

Modern razor blades won't be harmed by EMP, but the whole retail system that you get them from will be wiped out. You can build up a stockpile but that's expensive. On the other hand, if you have a safety razor that uses double-edged blades, you can get a pack of ten blades for a couple of dollars. For real self-reliance buy a straight razor; with a leather strop to keep it sharp, that will give you close – if dangerous – shaves for decades.

57. Shaving brush

When the cans of shaving gel run out you'll be forced to rely on soap. Luckily, soap is something you can make yourself – all you need is fat and wood ash. Not so luckily, you can't just squirt some from the can and start shaving. You have to work up a lather, and for that you need a shaving brush. You'll have no trouble finding one; just enough die-hards prefer them that they're still being made.

58. Ice crusher

Crushed ice is great for cocktails, but it also comes in handy for making cold compresses. Many of us can get crushed ice by just pressing a button on the front of the freezer. That freezer has a lot of electronics in it, though. In the future you might be very grateful for a hand-cranked ice crusher; you can drop in chunks of the ice you stored in the root cellar, and grind them into chips.

59. Hand saws

Power saws have made wood and metal working much easier, but apart from gasoline-powered chainsaws you can't rely on them after an EMP. Make sure you have hand saws capable of tackling any building or repair jobs that are likely to come up. At a minimum you should have wood and hack saws. A tenon saw and a bow saw will give you even more flexibility.



60. Bit and brace

If power saws are useful, power *drills* have become the only way for any self-respecting workman to bore a hole. But, like everything powered by electricity, you can say goodbye to them after an EMP. You're still going to have to make holes in things though, so you'll need some kind of hand-powered drill. A drill with a crank is one option. A bit and brace – a bar with an offset handle, and a chuck at one end to hold the bit – can deliver more force, and once you've got the knack of using it you'll be able to drill faster. You can even drill metal, if you start with a small pilot hole then progressively enlarge it with bigger bits.

61. Screwdrivers

If you've been using a cordless drill to drive screws, be ready to go back to doing it by hand.

62. Baking tins

Your bread maker isn't going to survive an EMP, so if you want to keep making bread after the attack you'll need to do it in the oven. That means you'll need loaf tins to put the dough in. Once you've baked it you can make toast.

63. Toasting fork

Toasters are great. Just drop in some bread, push the lever down, and a few minutes later toast will pop out, browned just the way you like it. As long as the power grid hasn't been devastated by a North Korean warhead, of course. When that happens you're back to making toast the old-fashioned way.

For perfect old-school toast you need a toasting fork – basically a giant fork that's long enough so the toast gets properly browned but your hand doesn't. Brass ones turn up in antique shops because they're popular ornaments, but a lot of older brass contains up to 2% lead and you



probably don't want to be heating that while it's imbedded in something you're about to eat. Look for a steel one.

64. Thermometer

Electronic thermometers are easy to use and super-accurate, but they're not very EMP-resistant. An old-style glass one, filled with mercury (if you can get it) or alcohol is a lot more durable. It won't need batteries, either.

65. Carpet sweeper

Vacuum cleaners were first invented in the mid-19th century; they were powered by hand-operated bellows and they were completely useless. The rise of electricity changed all that, and now almost every home has a compact, powerful machine that can quickly clean carpets even when they're loaded with ground-in dust.

Between the hopeless manual vacuum cleaners and the ubiquitous electric ones came the carpet sweeper. A simple mechanical device on the end of a long handle, the action of pushing it across the carpet turned a series of brushes that swept dirt into a container. They were light, cheap and surprisingly effective – and totally impervious to EMP. If you want one, they're still being made – and they're a much easier way to clean carpets without power than getting down on your knees with a stiff brush.

66. Carpet beater

If you have loose rugs or unfitted carpets, there's a simple way to get deeply embedded dust out of them. Take them outside, hang them over a rope and whack the hell out of them with a carpet beater. Usually made of bamboo, these are just a pole with some loops at one end – but they deliver a lot of force to the carpet, and they'll take care of anything that the carpet sweeper didn't manage to remove. Before vacuum cleaners came along the usual routine was to sweep the carpets a couple of times a week, then take them outside for a good beating in spring and fall.



67. Address book

Cell phones and e-mail apps make it easy to store, share and use people's contact details. You can have everyone's name, address, phone number, email and other information at your fingertips, wherever you are. But how much of that information will survive an EMP? Probably none. Eventually communications networks will come back up, and you'll be able to replace the devices that got destroyed by the attack, but your contact lists will be gone forever. Unless you've written them down in an old-fashioned paper address book, of course.

68. Telephone directory

Some landline phones will make it through an EMP, and unless society collapses most of the network will be up and running again fairly soon. That won't help much if you can't find anyone's number, though. The phone book and Yellow Pages are still handy things to have.

69. Slide rule

Pocket calculators are great – but electronic. If you need to do any complex math after an EMP, you need a slide rule. Every engineer used to have one of these stuck in a pocket, but calculators made them obsolete. An electromagnetic blitz will make them essential again. Practice with it occasionally to make sure you know how it works.

70. Sextant

If you have a boat, and go offshore, you probably navigate with GPS and a chart. If GPS is gone you can get away with a chart and good compass, as long as you stay within sight of landmarks on shore – but once the land drops below the horizon you're lost. That's where a sextant comes in. If you have a good mechanical chronometer to tell you the time, a sextant and a book of sun and star tables, you can accurately plot your position.



71. Plow

If you have some land, and you're using a mini tractor to plough it, you might want to look at alternatives for when technology gets wiped out. A horse-drawn plow is slower than a modern one, but it does just as good a job.

72. Sailboat

Obviously you can't get offshore without some way to power the boat, and modern marine diesels are heavily computerized. Sails might be old-fashioned, but they're reliable.

73. Tinder box

This list is full of things that need to be lit – lanterns, stoves, ranges and so on. Lighting things is easy as long as your supply of matches and cigarette lighters holds out, but depending on how long the collapse lasts, you might need an alternative. A tinder box is the answer. With a flint, steel and a nest of shredded cloth to catch the sparks and start a flame, it will carry on setting fire to things for decades.

74. Wind pump

If you get water from your own well, and it's raised by an electric pump, you might have some trouble after an EMP. Wind pumps used to be a common sight on farms, and they're not difficult to make.

75. Cash

Cash isn't obsolete yet, but it seems to be heading that way. Between online shopping, contactless cards and even Bitcoin, there aren't that many times when you really need to pull a fistful of dollars from your pocket. That's likely to change in a hurry if we're attacked. Some people put their faith in gold, but that has problems when it comes to making small payments – and many people won't know how much it's actually worth, anyway. An emergency reserve of greenbacks is much less complicated.