Free Radical

Faraday Bag

Starchain Ventures

#1

Free Radical Manual Series is by & for Radicals.

We cover the topics that are important & necessary for our existence.

I dug through 50 year old Leftist Books, Neo-Nazi Chats, Military Manuals, Forums, Physical Libraries, & combined my own Experience & Experiments so you wouldn't have to.

Long Live the Social Revolution!

This is the first issue of the Free Radical Starchain Ventures Manual Series. Hopefully the first of many.

Want more Manuals?

Email *starchain_volturione@protonmail.com*

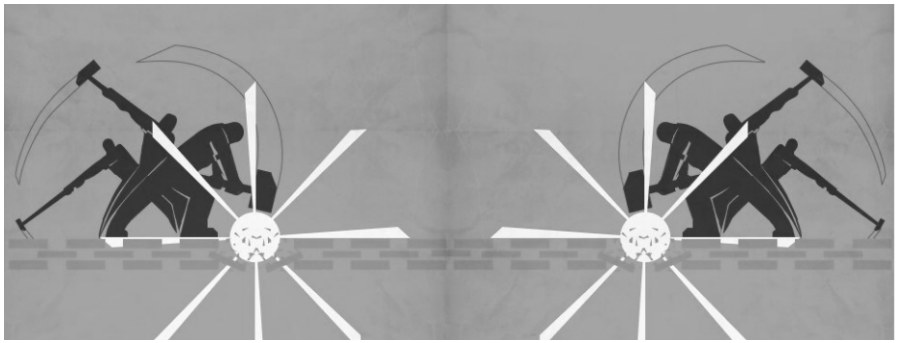
or tweet your idea or question *@Starchain6*

Want to Improve these manuals?

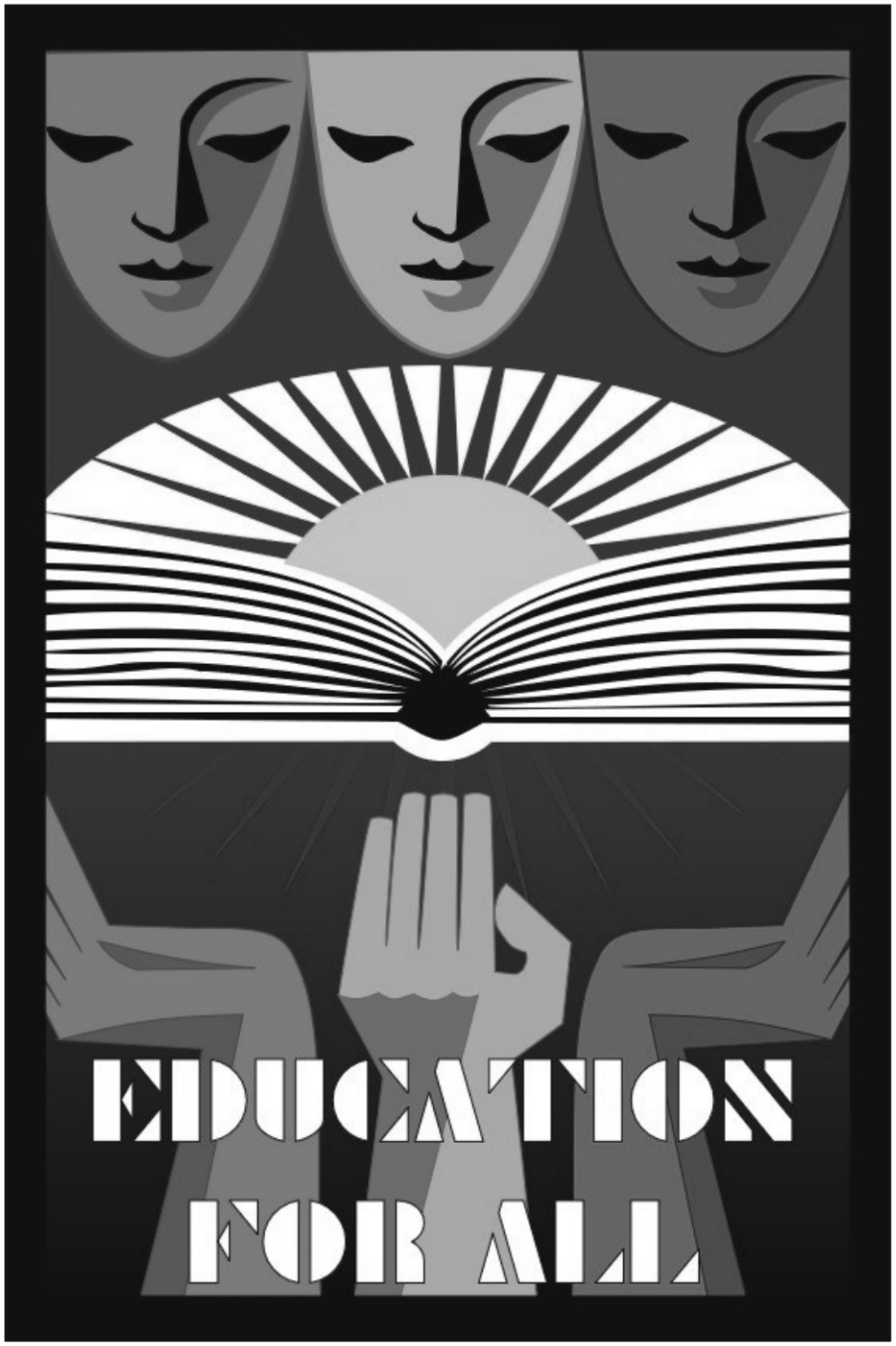
Starchain can't do everything alone, provide material support, technical support, or share your knowledge to help create new manuals & expand our collective knowledge base.

Don't like the manual?

You can contribute to updates & improvements or you can put in the work to make your own better one. Either way our collective knowledge base grows.



Keep Learning Keep Teaching



Step Six: Only open the bag when you know it is safe to do so or when predetermined emergency conditions are met.

CONCLUDING RANT & FURTHER READING:

Faraday bags look like & for all intents & purposes function the same as a "foil bag." A shoplifting device meant to overcome the theft prevention devices that trigger the alarms at the exits of stores. Foil bags are prima facie evidence in some states, meaning they like lock picks, can count as proof you intend to commit a crime & therefore is one of the few exceptions in American law where you are guilty until proven innocent. While I never intend to take a Faraday bag into a retail store I still don't want to incur unnecessary risk or hassle if I'm ever arrested with a faraday bag on my person. I am not a legal authority but I think by having written Faraday on it I have improved my case in proving I did not in fact intend to commit a crime. Also if I did wish to run that hustle a real faraday bag that isn't a big shiny crinkly mass can be bought on the internet for $50- is completely legal & less eye catching.

Sadly researching homemade Faraday bags/ cages & blocking EMF outside the X-Gamma range turns up anti 5g Qanon conspiracies & preppers burying Red Dot sight's in trashcans. If you want to learn you need a very specific textbook or a friendly physicist to help you.

This Issue of Free Radical Will Teach You How To Make a Faraday Bag

If you just want to build the Faraday Bag go to page 10

I do go into as much scientific detail & experimental data as possible in this zine, I value readability (& writing excessively increases printing costs) so it should all still be readable to the laymen (any proficient English first or second language reader).

Cradle the Seed Even in the Mouth of the Volcano— Starchain

TABLE OF DISCONTENTS

USE PROCEDURE

When using the Faraday bag the best practice is as follows:

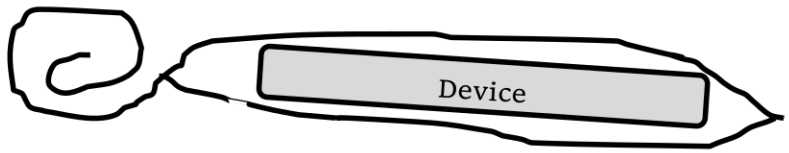
Step One: If you haven't already, turn off "Auto Connect to Wi-fi" on your internet Capable devices, turn of Roaming, change your device visibility settings so as few devices as possible can see it, never leave Bluetooth on or discoverable.

Step Two: Put your device into Airplane Mode.

Step Three: Power Down your device. Unless you did something weird to your settings, if it powers on it will do so in Airplane mode.

Step Four: Put device in Faraday Bag

Step Five: Close bag tightly, & ensure it stays shut. I recommend rolling the excess of the bag up, the foil will naturally hold shape, otherwise you may want to tie or tape the bag shut after folding the top.



Extra Tidbits, **Skip to Use Procedure 16**

In these instructions & testing another plastic layer was added every 3 foil layers. This may be unnecessary but I read that insulated layers do more than just another layer so I ran with it. Redundancies are safer & I figured more plastic = more water, noise, & impact resistance.

If you wish to improve your bag I recommend increasing foil thickness &/or layer count, ruggedize the exterior, & use glue or tape to build layer adhesion making the bag sturdier (in theory).

I made this guide & did the experiment because claims are all over, Hong Kong Protestors were putting a phone in two layers of foil then in a sandwich bag, Preppers saying you can use a shoe box & "several" layers of foil, most sources say 3-7 layers... those instructions are dubious, imprecise, & as we found– dead wrong. It's likely heavy duty foil would do more than thin Dollar tree foil, still I recommend no less than 12 layers of foil for a Faraday Bag.

THE QUICK & DIRTY ON FARADAY BAGS

-Soft Sided Version of the Faraday Cage

-Invented by Michael Faraday 1836

-The conductive exterior distributes & cancels the effects of energy on the box's interior

-Known for flashy shows when paired with a Tesla Coil, their shielding abilities are practically applied to valuable electronics & scientific equipment

-A good Faraday bag will block most signals to or from electronics within it

-If you can't take the chance your cell is being: tracked, monitored, hacked, or having your data will be swept up in a Geo-fence warrant then you should use a Faraday Bag

-You can make a Faraday bag from literal trash!

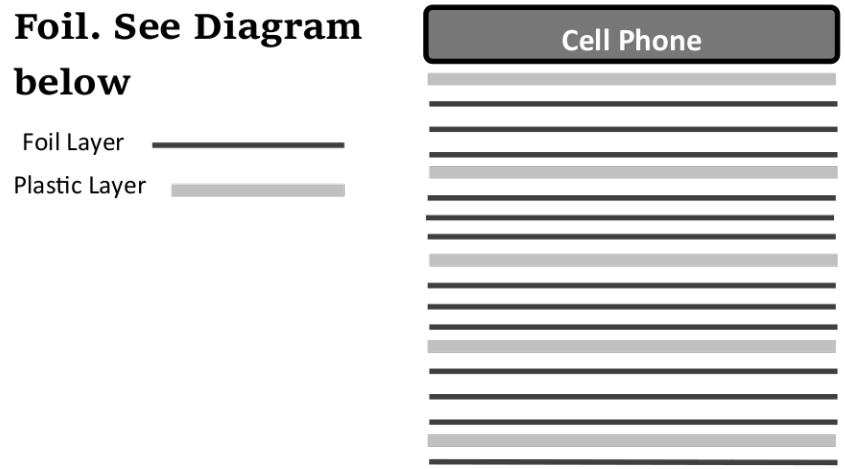
Substances don't magically block electromagnetic waves after a certain thickness, foil will "attenuate" frequencies until they are unusable for most energies of most frequencies. I spent two hours combing scholarly articles, military data sheets, asked a few teachers & couldn't come up with a solid lead on the linear attenuation coefficient of Aluminum in Decibel Milliwatts (dBm) for the 450–2700 MHz (cell), 2.4, & 5 GHz (wi-fi) range. (GPS is 1227.6 or 1575.42 MHz so it's within cell ranges.) Faraday bags advertise attenuating between 60 & 160 dBm of signal.

Police have been known to replace their shielded electronic evidence bags (fishy sites sell these for $50 dollars,) with several layers of aluminum foil. If it's good enough for pigs to stop hackers from remote wiping 'evidence' it's probably enough for our purposes.

It may be excessively nerdy but go look at a microwave door, that's an Electro-Magnetic Frequency (EMF) attenuation shield for the frequen-

Step Five: repeat steps three & four at least 4-times. Then give it one last layer of foil for good measure. Roll the excess foil at the bottom to seal it off then tape it in place. You can tape the outside of your bag for strength if you wish.

In the end your faraday bag will have at least 5 layers of plastic & 13 layers of Foil. See Diagram below



Step Three: Wrap your form loosely with the foil, leave excess at both the top & bottom. The amount will depend on the size of your form & intended devices. I left more excess on the top than the bottom.

Step Four: after 3 wrappings cut the foil I folded the interior bag out over the foil to ensure it's completely insulated. Then bagged it again. Each exterior bag I taped the excess bag to itself to keep the foil layers insulated.

-cies emitted by the microwave. Notice that it has holes like mesh, to disperse the EMF it doesn't need to completely envelope what is to be shielded. If I've read correctly, the highest frequency signal cellphone's operate on is wi-fi, high frequency means short wavelength & that is what determines the size of mesh on a microwave. Supposedly a hole can be 1/4 the diameter of the shortest wavelength you intend to block. In this case 5 GHz has a wavelength of ~6cm, 6cm/4= 1.5 cm diameter holes in faraday cage mesh. In theory this means you could build a faraday cage for devices like computer towers to shield them from remote hacking & leave a narrow hole or two for power & HDMI cables. I don't have the resources to test this so don't get too adventurous with this & make a dodecahedron to enclose your devices.

After the internet proved useless I took my research to a physical library looking for the linear attenuation coefficient or how to calculate it (from number of electrons & thickness perhaps?) but exhausted the sections on chemistry, wave theory, metal technologies, & signals theory. If we're going to find this to go about this more scientifically we're going to have to find a relevant expert or it's buried in construction technical data sheets.

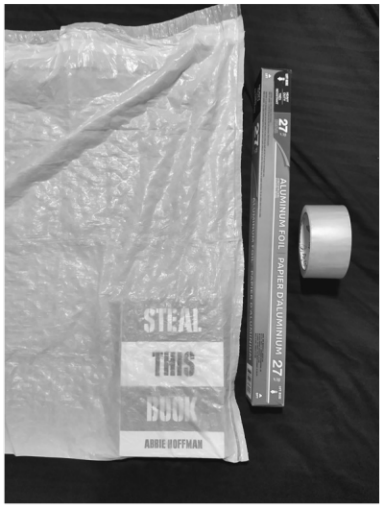
EXPERIMENTAL RESULTS:

There are a few apps that let you access your sensors & record their measurements like you would video, using one of these I tested various foil thicknesses (see **CONSTRUCTION** for details).

Controls: 5g sig, GPS precise mode, 5GHz wi-fi

Foil Layers	Wi-fi lost	GPS lost	Signal lost	Call test
1	No	No	No	Failed
2	No	No	No	Failed
3	No	No	No	Failed
4	No	No	No	Failed
5	No	No	No	Failed
6	No	No	No	Failed
7	No	No	No	Failed
8	No	No	No	Failed
9	No	No	No	Failed
10	No	Yes	No	Failed
11	No	Yes	Yes	Success
12	No	Yes	Yes	Success
13	No	Yes	Yes	Success
14	No	Yes	Yes	Success
15	No	Yes	Yes	Success
16	No	Yes	Yes	Success

Step One: First I bag my copy of Steal This Book. Use tape to make the bag closer to the size of the book but not too snug or your book will be stuck inside your faraday bag.



Step Two: Tape the foil to the back of your bagged form (book). When in doubt, use more foil.

GATHER YOUR MATERIALS

-Plastic/plastic bags

-Aluminum foil

-Tape

-Something to use as a form (book)

I didn't make it easy for myself, I built mine using the thinnest Aluminum foil I could find (sourced from the Dollar Tree 2.5 meters for $1), 2 trash bags, & packing tape. Any plastic will work, any tape will work, & any foil you get (besides food wrappers) will be as good or better than what I used.

I made this example quite large, it can completely enclose 13 x 3.5 x 26cm of electronics (about 4 phones, a tablet, & a handful of USB drives, Even at this size I was able to get 13 layers from my foil roll.

Foil Layers	Wi-fi lost	GPS lost	Signal lost	Call test
17	No	Yes	Yes	Success
18	No	Yes	Yes	Success
31	**No**	**Yes**	**Yes**	**Success**

Looking at these results you should see why I doubted the efficacy of online claims. Putting one faraday Bag inside the other I reached 31 layers of foil & could still connect to Wi-fi. This doesn't rule out Faraday bag use, the Wi-fi mitigation steps are one's I'd generally recommend for OpSec before even using a Faraday bag. Turn off "Auto Connect to Wi-fi", change the device visibility settings so fewer devices can sense yours. Before using the bag turn your phone to airplane mode, then turn it completely off before stowing it in the bag. See **USE PROCEDURE 16**

This procedure should be reproduceable for anyone: get a measuring app, put your phone in a foil bag built to spec, attempt to call your phone, remove it & check the app's recording. It is possible that different phone's & proximity to more

powerful transmitters will affect the precise amount of foil layers needed to shield your device, so when in doubt round up. If your device was previously hacked & a snooping program was installed to take control of your microphone it could in theory record while in the Faraday bag & transmit next time it is taken online. While presumably you will never encounter this, it can't hurt if your faraday bag is somewhat sound deadening with extra layers. Some preppers use bubble wrap as their insulation layers because it physically protects devices, I think this would also deaden sound.

Since our world is swimming in plastic waste, using waste plastic to make faraday bags is useful recycling. Please don't use new plastics when constructing your Faraday bag. Plastic layers deaden sound & probably improve water & impact resistance– pick up litter or save your trash to get your plastic.

CONSTRUCTION

For Fucks Sake Don't Just Wrap Your Phone in Foil!

Last time I even saw a phone with an exterior or extendable antennae was 2017 but that doesn't mean they aren't still made or that you & your comrades don't have old tech. **It's not safe to assume your faraday bag will only ever be used with your devices.** If a phone's antennae can contact the aluminum foil at all instead of shielding your phone you made it a larger (shitty) antennae, don't rely on your case providing you an airgap or that your Faraday bag won't be used with anyone else's phone. Insulation layer first, follow the instructions, I made it this way for a reason.

Bag it first.

Or Else.