

**Protecting yourself and family** from the novel coronavirus that causes the disease Covid-19, which I'll call "virus" and "disease" or "coronavirus" in this note.

In brief, this is what I understand and do.

1. The virus dies slowly outside the body, lasting longest on plastic, glass, and most metals. If you bring something into the house and let it sit for three days at room temperature, this virus should be "dead". It is also vulnerable to "Weak Bleach," a 100:1 dilution of normal (5 to 7%) liquid laundry bleach such as Clorox. You can make this weak bleach by adding 3 tablespoons of bleach to a gallon of water or 1 tablespoon to a quart.

2. The disease spreads readily from person to person. Until the end of March, the disease was reputed to spread largely by droplets from coughs or sneezes, or by "fomites," the residue of virus picked up from solid surfaces by your hands, and then delivered to your nose, mouth, or eyes when your hands touch your face, typically 10 times per hour or so.

There is now evidence that a major mode of transportation is by normal breathing or conversation, even from people who do not yet have symptoms of the disease, and may never develop symptoms! This is the basis of the advice that you stay 6 feet away from another person, even though it was originally issued to protect against droplets. It still spreads by fomites and droplets as well as by "aerosol" from normal breathing. The CDC (Centers for Disease Control) now recommends that we all wear cloth masks, or scarves or a bandanna when with others outside the household.

3. In brief, what I do:

I have been wearing nitrile gloves outside the home, and when bringing food, and other items into the home. Mine are 5-mil thick. I use nitrile gloves because I showed In February that they survive baking in the oven at a temperature of 180°F for an hour, whereas the virus is surely "killed" by a few seconds at 180°F, and by a couple of minutes at 160°F. I don't know about other plastic gloves; if you have a stock of them, try baking one.

The virus is also killed by weak bleach, so each day I put 1 tablespoon (1/2 ounce) Clorox and 50 ounces of tap water in a mid-size plastic bowl in the sink. I mark the bowl with a line at the 50-ounce level (roughly a quart and a half), and I add a small squirt of Dawn or another sink detergent. You are advised to "wash your hands frequently" for 20 seconds, and it is important to realize that you can also wash your gloved hands, with less skin irritation and more certain removal and deactivation of the virus.

The Dawn ensures that the weak bleach wets the gloves, so all I need to do is to "wash" my gloved hands for a few seconds, and then think great thoughts for about 20 seconds, while my gloved hands are glistening with the solution that will then have killed the virus. Then I rinse my gloved hands briefly with tap water, and dry them on a towel, which thus remains "clean".

None of this applies to a person who has active symptoms of the disease – dry cough, elevated temperature, possibly headache. They don't need to protect themselves against the virus, but they should try hard to keep from contaminating others – but that's a different question.

4. I re-use the gloves and paper products.

At the end of the day (your schedule may be different), I return the gloves to their pristine form by baking them, and I decontaminate any small pieces of paper towel that I have used and are not visibly dirty. In fact, I have labelled sheets of paper towel, each 5.5-in square, "gloves" and "face", which I use respectively for blotting the gloves after drying them with the linen towel, and sometimes for washing the region of my eyes with tap water. "G" and "F" will do, too.

I have a baking sheet on one rack of my oven; I pre-heat the oven to a temperature of 180°F and leave these things in for five minutes. I then open the oven and remove them with my bare hands, because these very thin items don't have enough heat content to injure my skin. I put them in a place reserved for "clean", and they are ready for use again. I have used one pair of gloves for two weeks, but they will eventually tear.

I often remove my gloves by peeling them off from the cuff, and I leave them inside-out, and with the fingers crumpled. After they are heat cleaned, I put the wrist of the glove to my mouth, and blow, to straighten out the fingers. This also tests for leaks. If your hands are dry, the gloves can also be removed by pulling the fingertips.

I don't wear the gloves all day in the house, after cleaning anything I bring in and then washing my gloved hands; everything in the house is dubbed "clean."

You can operate a smart phone with a gloved finger, if the glove fits snugly to the fingertip, but you can't do touch-ID, because the fingerprint cannot be sensed through the thin glove. So, you must log on to your smart phone by using its Pin or password or face-ID if it has that.

## 5. Bringing things into the house.

When you bring things in, such as packages, canned goods, vegetables, and the like, or even mail, you may have a "waiting station" where you leave them for three days, before opening the package or putting things away. I do that with a box of Shredded Wheat, for example; but I could also use a sponge wet with weak bleach to wipe the surface of the carton and let it dry rather than rinsing it. I could instead open a (possibly tainted) carton and remove the clean sealed waxed-paper sack to put on the shelf, discarding the carton without cleaning it.

I clean my ordinary mail by first discarding (with my gloved hands) all mail that I don't want to open. And then put the remaining envelopes (even the ones with transparent plastic windows) into the oven at 180°F for 30 minutes. It takes longer for mail than for gloves or the tissues or pieces of paper towel, because the heat must penetrate through one piece of mail to the one below it. If you had a kind of rack on the cookie sheet, so that the mail could stand vertically between the wires of the rack (or, if you would spread out the mail on the oven rack) the surface of the envelope would be cleaned in just a few minutes. It takes an hour or more to bake the inside of a fat newspaper.

However, if paper falls on the bottom of the gas oven or on the heating elements of an electric oven, it will catch fire. Please avoid that! If it should happen, leave the oven door closed until the fire burns itself out. Otherwise, you are likely to have embers in your kitchen, which could start other fires!

As for the things you need sooner than a few days, which may have surface contamination by "fomites" from some infected person along the supply chain, here is what I do.

For fruits, I immerse them in the solution of "weak bleach" plus Dawn for a minute or so, and then let them drain in the sink, while still wet with the solution. After you've done all the fruit, rinse the surfaces

with tap water and let them dry in the dish drainer. For vegetables such as celery, I immerse those too, or if they are too long for the bleach bowl, I use a "sponge" or brush to wet them with the solution and let them sit, moistened, in the sink for a minute or two, before rinsing them with tap water and putting them in the dish drainer. I've been doing this for years to protect against *E. coli* or other food-borne germs.

I have "aged" two heads of cabbage on the counter for 3 days to decontaminate them, but because any virus contamination is only on the surface, I could have taken off the outer leaves and discarded them, or put the outer leaves in the solution and rinsed and drained them individually.

The virus lives for a month or so in the refrigerator, so wash the outside of milk cartons/bottles before you refrigerate; it lives years in the freezer.

Frozen food packages are treated differently. For the frozen vegetables in sealed plastic pouches, I put one such in the weak bleach for a few seconds, rinse it off immediately, drain the package for a few seconds, and put it in the freezer, all with gloved hands, of course. I have had no experience with frozen foods in cardboard packages, such as ice cream; perhaps some of these techniques can be used for them.

I hope you stay well!

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