

Reading boxes protect against the fumes from books and magazines



People who are sickened by the fumes from printed materials can read books and magazines with a reading box. This is an overview of designs and how to use them.

Keywords: reading box, book, magazine, fumes, ink fumes, moldy paper, multiple chemical sensitivity, MCS, adaptive technology, disability

The problem with printed materials

Some people get sick when reading a book or a magazine. This is caused by the fumes given off from the ink, the paper, chemical treatments of the paper, or mold embedded in the paper.

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Colorful pages are particularly noxious. This is due to the greater amount of ink used to produce the colors. High-quality images can have five layers of printing. Glossy images also seem to use high-VOC inks.

The paper itself can also produce noxious fumes. This can be from chemicals added during the production of the paper. Post-consumer recycled paper is often moldy, since the paper is commonly stored outside while awaiting pick-up to the recycling plant.

Old paper often gets moldy on its own, especially in a humid climate. Keeping them in a temperature-controlled space or sealed in individual bags (plastic or foil) can help. Some people scan or re-copy old documents.

Individual sheets of paper can be offgassed by hanging them on an indoor clothesline, but it can take weeks for some particularly toxic materials. Offgassing doesn't help with moldy paper. Closed-up books do not really offgas much, even after sitting on a shelf for years.

Reading boxes can help

A reading box prevents the fumes from a book or magazine from reaching the reader.

Reading boxes have been used since at least the 1980s to allow people with chemical sensitivity or mold sensitivities to read. In recent decades, electronic books and computers have replaced reading boxes for many people, but some still need the reading boxes.

People who have electrical hypersensitivity (EHS) may not be able to use an electronic book reader. There are also people who are bothered by the light and flicker from computer screens.

There used to be a cottage industry manufacturing reading boxes, but today people usually have to build it themselves, or hire someone to build it.

There are three types of reading boxes:

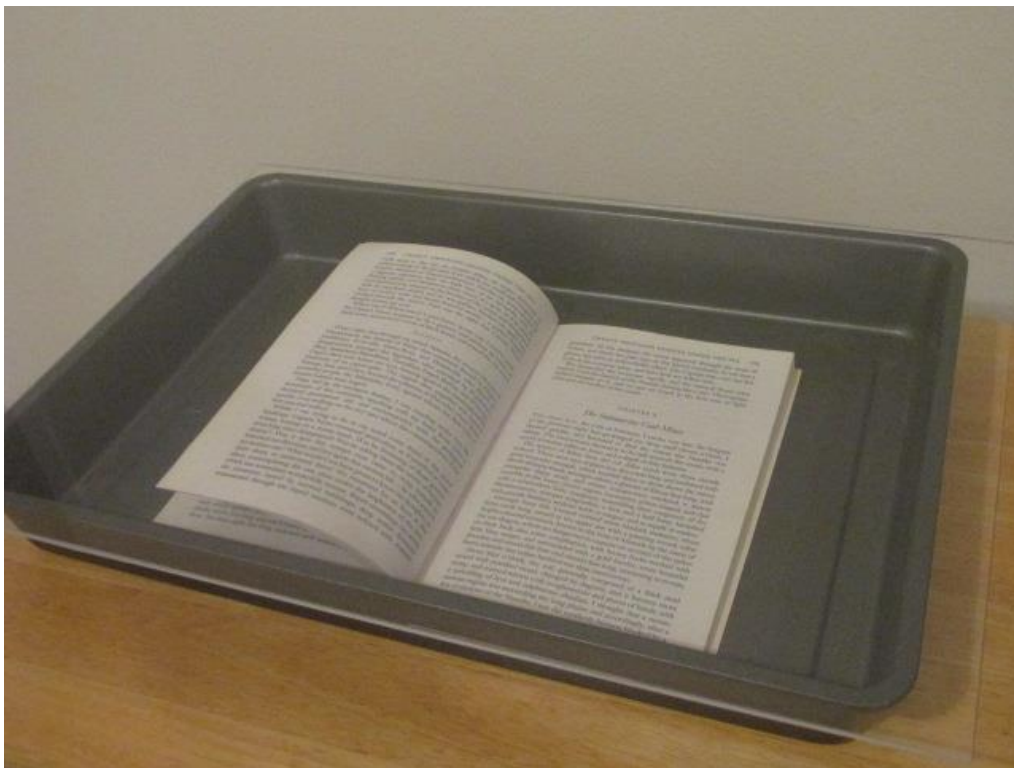
- Basic box
- Vented (electric) box
- Unvented (non-electric) box

They all have their advantages and disadvantages.

The basic box

The basic box is very cheap and simple, but also exposes the reader to more fumes. It consists of some sort of tray with a transparent lid to see through. Some people use baking trays, such as a turkey pan, a cake pan or high-walled cookie sheet. The lid can be a piece of plastic or glass (such as from a picture frame).

The book or magazine is placed open inside. The spine may need to be broken first. The lid is so close to the book that the pages are prevented from moving on their own.



A basic reading box.

The lid is lifted to flip the page. It may be necessary to hold your breath to avoid the toxic whiff, and small rooms get stinky after a while.

This setup is often not enough to avoid symptoms. The two other kinds of reading boxes offer superior safety, but at a cost.

The vented (electric) reading box

The vented reading box uses an electric fan to suck the fumes out of the box. In most cases, one side of the box is open so the reader can reach in and flip the pages while the airflow prevents the fumes from leaking out.

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There are versions with less powerful fans that have small openings a hand can reach in through, or even smaller holes that fit a stick used to flip the pages.

The box is connected to a hose which takes the fumes out of the room. It is usually connected to a window, though we've also seen stationary systems where the hose goes up into the attic or through a wall. We've heard of people who sent the fumes through an air purifier and then back into the room.



Vented reading box with one open side.

We have seen small semi-portable reading boxes, like the one in the above picture. We have also seen large stationary reading boxes that covered the entire top of a desk, with a hose mounted on the wall going up into the attic.

An advantage of the vented reading boxes is that it is easy to reach in and write on the papers or move them around. Flipping the pages is also easy and intuitive.

The vented reading boxes can be built very large, so they can hold broadsheet newspapers, or several books and sheets that are all open and visible at the same time.



Suction fan exhausting fumes out through a window.

There are also some disadvantages. The noise and EMF from the fan make them unusable for some people. This can sometimes be mitigated by placing a suction fan in the attic, with a long hose to the box, but even that may not be acceptable.

It is cumbersome to move a vented reading box, such as when clearing a table for other uses. The hose makes this more complicated, and if the fan is not running, toxic fumes can leak out. You may need to remove the book before turning off the fan.

There can be leakage problems if the fan is not powerful enough, especially when pulling a hand out of the box. Back drafts can also happen if there are gusty winds outside.

The unvented (non-electric) reading box

The unvented box seals in the fumes. The reader flips the pages using a couple of sticks that go into the box.

The benefit of the unvented box is that it can easily be moved around. The toxic materials are still sealed inside while the box is moved, and there is no hose to contend with. There is no noise and no EMF.



The downside is these reading boxes cannot be made as large, as the sticks need to be able to reach. It is only realistic to have one book or magazine in such a box at a time. A workaround is to have two reading boxes.

The user has to learn how to flip the pages using the sticks. It is not hard, and eventually becomes nearly as fast as the regular way (we've done it for 19 years).

Using the sticks is quickly learned, though they are not good at handling stacks of loose sheets (books and magazines work much better). Thick/stiff paper is also difficult.

The seals can leak, though since there is no airflow, even a very leaky reading box will still contain the fumes quite well.

We have used both vented and unvented reading boxes. We much prefer the unvented type, but it depends on the need.

Glove boxes

Glove boxes have large gloves permanently affixed to the side of the box. These boxes offer the tightest seal and are used in the nuclear industry to handle lightly radioactive materials. They are also used to handle viruses and other biohazardous materials. NASA used them to handle rocks from the Moon.

The MCS community built and used glove boxes in the 1980s, but they were too cumbersome to use. It takes an effort to get a hand inside such a glove and it is too tiresome to keep the hand in the glove while reading a book.

Tips on using a reading box

It is easiest to read books that can lay down flat on their own. Hardcover books and books with larger pages work best.

When a book has a stiff spine, it helps greatly to break the spine a few places before putting it inside the box.

You may still need to rest the sticks on top of the pages to hold them open. Occasionally you may even need to apply gentle pressure to prevent a page from flipping on its own.

If the box is not tight enough, it can help to offgas the book or magazine for some days or weeks beforehand. That at least lessens the fumes from the covers, which tend to be the worst parts. Some people tear off the covers.

Offgassing the reading materials some before placing in the box can also limit the exposure when opening the box.

Extremely sensitive people could change the contents of the box outside, though that is rarely needed and not feasible with an electric reading box.

Using the sticks

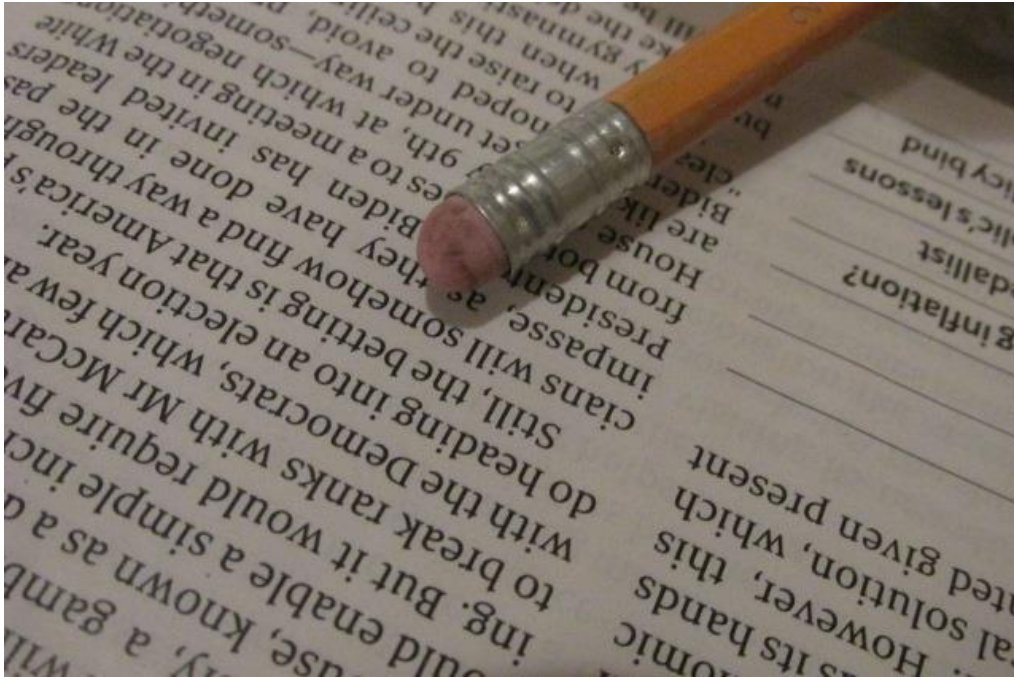
The sticks are used to flip the pages in a book or magazine. They work best when the pages are bound to each other, while loose sheets are much harder to flip and move.

The sticks usually have something on the end to increase friction against the paper, such as an eraser head.

We've found unsharpened pencils with an eraser mounted on the end works quite well.

Use the left stick to hold on to the book or magazine, while turning the page with the right stick.

A page can usually be turned by pressing the stick down onto the right side of the page, then gently move the stick to the left. Once the page perks up, move the stick in under the page and then flip it over.



Eraser heads at the end of the sticks provide friction against the paper. This one is quite worn after 18 years of daily use.

If the page is rather stiff, it may resist perking up. Then use brute force by firmly pressing the end of the stick into the side or bottom of the page. That should make it perk up. Then get in under it and turn it over.

This takes a little practice, but once learned it can be done nearly as fast as the regular way.

Do watch out for accidentally turning two pages. Some sorts of paper are more prone than others. It helps to keep an eye on the page number while turning the page, though if the story continues on the new page it may be evident from the break in the text.

Ergonomics

Looking down through the lid of the reading box can eventually cause a sore neck. It may help to tilt the box towards the reader. If the book or magazine slides too far forward, you can place a ruler (or similarly shaped piece) in its way, which will still allow the use of the sticks to flip the pages.

Reflections in the lid can cause eyestrain. Place a light source at an angle that reduces the glare.

Maintenance and repair

The amount of maintenance will vary with the design. If built well, and of solid materials, it should last a very long time. We had a box in daily use for 18 years before it needed replacement.

After a year or so, there will be a smelly film of chemicals deposited on the inside. It can be smelled when opening the box while empty. The film can be wiped off with a damp cloth, or it can be aired out. Cleaning is easy, though you may want to do it outside.

If there are any plastic parts, do not leave the box in the sun to air out. The ultraviolet light can damage plastic, or make it milky.

Reading boxes in popular media

A reading box is shown in the 1995 film *Safe*, directed by Todd Haynes, with Julianne Moore as Carol who becomes sick with MCS. When Carol initially tours an MCS camp in New Mexico, a reading box is briefly seen on a table.

In 2016 *The Guardian* made a short documentary film on their visit to the MCS community in Snowflake, Arizona. A reading box is demonstrated in one scene.

More information

For more information on how to cope with chemical intolerances, go to www.eiwellspring.org.