

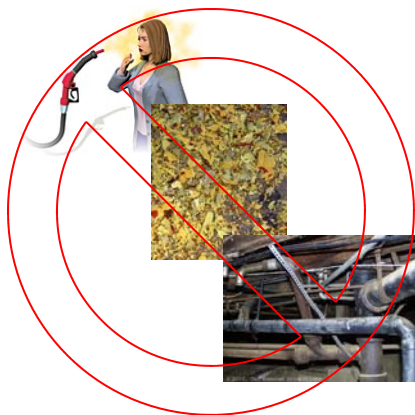
## What thing can cause OS?

Among other things, there is mounting laboratory evidence that heavy metals such as **Lead (Pb)** and **Manganese (Mn)** can cause OS that kills your precious hippocampal cells.

Typically, hippocampal cells do not regrow after toxic insult (although there are current laboratory efforts to synthesize their re-growth). So if you are exposed to certain levels of these metals in your environment they may result in OS that can lead to memory loss.<sup>2</sup>

## How do I get exposed to heavy metals?

Heavy metals are a natural part of the everyday world. However, you can be exposed to them in a concentrated fashion from things such as gasoline fumes, old paint chips and paint dust, old plumbing pipes, and even some candies!<sup>3</sup>



## Sources

1. Fields RD, Making Memories Stick, *Scientific American*, Feb. 2005, p. 25.
2. R.R. Reams and A.P. Stephenson "Effect of Pb, Mn and Pb/Mn Metal Mixtures on Rat Hippocampal Neurons Cell Viability." Abstract # 1762; 45th Annual Meeting and Tox Expo™ Society of Toxicology Meeting. San Diego, CA, March 5-9, 2006.
3. ATSDR Tox-FAQs webpage: <http://www.rccr.nm.org/tox-faqs.html>
4. Joyful Aging Antioxidants web page: <http://www.joyfulaging.com/antioxidants.htm>

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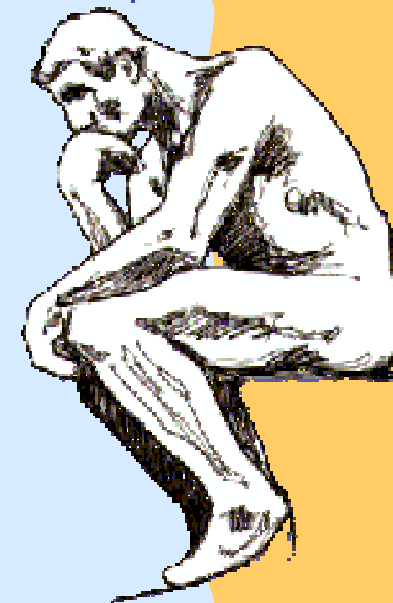
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What can I do to improve my memory?

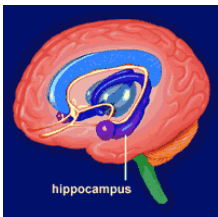


## How Do I Lose My Memory?

This information sheet provides some suggestions about how memory is lost, and what to do to avoid that memory loss.

At least one way to lose your short-term memory (i.e. directions, schedules, some recent names) is because the brain cells that allow for short-term memory die off.<sup>1</sup>

The general memory pathway: In order for memories to be stored they have to pass through a part of the brain called the hippocampus (yes,



there is a hippocampus in your brain!). If the cells of the hippocampus are in trouble for any reason then the pathway to remembering things is cut off.

**H**ow can the hippocampal cells die? At least one way is through a natural process called ‘Oxidative Stress’ (or OS). Sounds stressful doesn’t it? Well, you don’t feel this type of stress directly because it happens at a very small scale; the cellular scale. So your cells feel it, but normally you would not register this OS until many months or years of damage has occurred and many cells have died.

## Alright, I understand about OS...

But what can I do about it?

Remember, OS is a natural process that occurs all the time in your body, without any special exposure to toxic metals. But the problem of increased OS can be countered by eating foods that decrease OS because they naturally contain antioxidants.

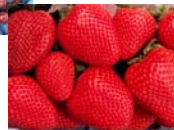
## I’ve heard of antioxidants...

But I still don’t get it.

Antioxidants are a natural, chemical way of reducing OS. Again, if we go into the lab and add antioxidants to brain cells that had been dying due to poisoning with heavy metals (Pb and Mn), the cells are ‘rescued’ and stay alive. And if hippocampal cells stay alive, memory stays intact. Things are looking up!

## OK, so how do I get hold of some antioxidants?

Do I need to spend a bunch of money on commercialized products advertised on TV? Definitely not! Nature has already provided the antioxidant sources for you. Foods rich in antioxidants are all around you. Some examples are: Fruit seeds and skins like blue-



berries, strawberries, raspberries, plums, dark grapes and cherries. Vegetables like kale, spinach, alfalfa sprouts, broccoli florets, and red bell peppers have similar protective benefits.<sup>4</sup>



Nature herself is trying to keep the fruits from dying too fast (because of OS) and you can reap the benefits for your own personal use.

## What’s the take home message?

Old and new environmental toxins are a threat to the good health of your cells. Everyone, to some degree is exposed to them. They can increase oxidative stress to important cells in your brain and body. Taking action by eating some fruit and vegetables each day is a natural, healthy way of lowering your environmental oxidative stress levels. Yes, Mom was right. REMEMBER it!?

