

# Computer a boon or bane

[Technology](#), [Computer](#)



An Iron nail or wire is placed such that the tip of the nail is almost touching the mercury. The mercury will begin to pulsate rhythmically, like a beating heart. Perform the Mercury Beating Heart Demo 1. Place a drop of mercury in a watch glass, petri dish or saucer. 2. Pour sulfuric acid over the drop to cover it. The exact concentration of sulfuric acid is not critical. Car battery acid works for this demo. 3. Add a small amount of oxidizer, such as potassium permanganate, hydrogen peroxide or potassium dichromate.

Aqueous solution or a few crystals are fine. 4. When you are ready to start the beating heart, approach the drop of mercury with the tip of the iron wire or nail. The heart will start to beat when the iron is close to the mercury, but not quite touching it. The mercury heart will beat for about 20 seconds before stopping. How the Mercury Beating Heart Works The mechanism for this reaction is not clearly understood, but it may involve oxidation of the iron.

The permanganate, peroxide or dichromate oxidized the mercury to produce mercury(I) ions which combine with sulfate ions from the sulfuric acid to form a thin layer of mercury(I) sulfate on the surface of the drop of mercury. The formation of the layer reduces the surface tension of the drop, causing it to flatten out. When the flattened drop contacts the iron wire or nail, the mercury sulfate oxidized the iron to form the iron(II) ion while reducing the mercury to its normal metallic form. The mercury has a higher surface tension, so the drop becomes rounded again.

As contact with the iron ceases, the oxide coating starts to form again, repeating the process. When all of the oxidized has been reduced, the

reaction stops. There is some debate about the mechanism because weaker oscillations have been observed even without the presence of oxidized. Less Toxic Alternative to Mercury Mercury is very toxic, so you may wish to perform this demonstration with another material. It turns out molten gallium may be substituted for the drop of mercury. Gallium will melt at a low temperature and is much less toxic/easily contained than mercury.

To perform the demonstration with gallium, melt a pellet of gallium and immerse it in sulfuric acid. Add a small amount of an oxidized, such as potassium permanganate, to the sulfuric acid. The gallium heart will be more slowly than the mercury heart. . Computer a boon or bane By humanitarian of an oxidize compound in sulfuric acid. The oxidized usually is potassium dichloride, hydrogen peroxide or potassium permanganate. An iron nail or wire is placed such that the tip of the nail is almost touching the mercury. The mercury will begin to pulsate rhythmically, like a beating heart.