

This was a battery bank of sorts, run in reverse. What was typical? A chlor-alkali production room would have contained upwards of 100 cells in a space generally the size of a field house, or a soccer pitch or the gridiron. Each cell in that production room would have contained somewhere in the neighborhood of 20 tons of liquid mercury. Density is a function of mass (how much does something weigh?) and volume (per what sized container?). In response to the questions of how dense is mercury? (answer: AF), what comes out of that weight per volume turn of the math crank is that a 55-gallon drum of mercury weighs about 3.5 tons. A 55-gallon drum of water, in comparison, weighs ~ 500 lbs or one quarter of one ton. So, is mercury about $3.5 \times 4 = 14$ times as dense as water? Yes. That is, for the same volume – whether the unit you've considered is a bucket or a drum or an electrochemical (battery) cell – the unit containing mercury will weigh 14 times as much as the unit containing water. Same volume; fourteen times as heavy. Dense AF.

How many of these facilities were built? Somewhere near 250 over the span of the 20th Century. How much mercury was lost to the environment from the operation of these facilities? It's impossible to say. Sometimes in some places a little per day; other times in other places a significant amount more. Over the duration of its operational life, it wasn't uncommon for a mercury cell chlor-alkali facility to lose ~ 10 tons of mercury to the aquatic ecosystem, as well as an uncountable (additional) mass volatilized into the air, spilled onto soil, and lost into the labyrinth of piping that connected the cells within the production room. The most significant mercury losses to the environment from these facilities frequently occurring prior to 1970 in those countries that introduced regulation and safeguards during that era, and at any point in operations for those countries that didn't.

The environments most impacted over the long term by this discharge? Maybe high latitude waterways – those vestiges of the last Ice Age in which glaciers scraped the ground clean and reset time = 0 for the slow making of new soils and the even slower accumulation of those soils into river basins as sediment. Fifty years might pass – the contamination working its way downriver rather than being buried, slowly declining in concentration but not diminishing significantly in cumulative impacts on human health. If other factors were (are) present: an industry continuing to discharge other effluents and dissolved oxygen vanishing downstream as a result, then the impacts of that mercury release are still propagating through time and across generations.

The environments least impacted over the long term by this discharge? Maybe coastal marine locations into which and onto which terrestrial soils have been continuously eroded and carried. Sedimentation = burial and the mercury that remains is identifiable in these locations as an interval in the environmental chemistry often datable in sediment cores to that pre-1970 period. The contamination is still there, but, even so, should we consider ourselves lucky if that period of history – now buried and ever deepening away from biological interaction – is this industry's only epitaph? Yes, we should. And in some places, it is. In others, they're running out of words and strategies for making those who should be paying for the aftermath see that it isn't.