

US-legislation and consequences for the incandescent light bulb

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Phasing out of the incandescent bulbs in the US

1. Energy Independence and Security Act of 2007

Section 321: EFFICIENT LIGHT BULBS

The term "general service incandescent lamp" means a **standard incandescent or halogen type lamp** that—

- I. is intended for general service applications;
- II. has a medium screw base;
- III. has a lumen range of not less than 310 lumens and not more than 2,600 lumens; and
- IV. is capable of being operated at a voltage range at least partially within 110 and 130 volts.

More information on the phase out of incandescent lamps can be found in this pdf-file: [The Light Bulb 'Ban' - Here are the facts.](#)

TABLE ONE

What The Law Says				
Current	Rated Lumen Ranges	Maximum Rated Wattage	Minimum Rated Lifetime	Effective Date
100	1490-2600	72	1,000 hours	1/1/2012
75	1050-1489	53	1,000 hours	1/1/2013
60	750-1049	43	1,000 hours	1/1/2014
40	310-749	29	1,000 hours	1/1/2014

- As one can ascertain, from 2012 on, the lamps have to be 25 - 30% more energy efficient than before.
- Also, the phase out of
 - the 100 watt bulb will start on 1/1/2012;
 - the 75 watt bulb will start on 1/1/2013;
 - and the 60 watt and 40 watt bulbs will start on 1/1/2014.
- Moreover: *If the Secretary fails to complete a rulemaking in accordance with clauses (i) through (iv) or if the final rule does not produce savings that are greater than or equal to the savings from a minimum efficacy standard of 45 lumens per watt, effective beginning January 1, 2020, the Secretary shall prohibit the sale of any general service lamp that does not meet a minimum efficacy standard of 45 lumens per watt.* (Energy Independence and Security Act of 2007, sec. 321, H.R.6-88 to 89)

This means that, after 2014, more restrictions will be proclaimed with the consequence that **not only common incandescent**

light bulbs but even halogen light bulbs will be banned. In 2006, 1.7 billion lamps were sold in the US, from which 1.5 billion incandescent light bulbs (Felipe Carlos Bastos, [Análise da política de banimento de lâmpadas incandescentes do mercado brasileiro](#), March 2011). If the Act of 2007 will not be adapted, in 2020 no common incandescent lamps will be sold! The US will then be the only western country where the free market has been restrained so drastically. Has a new age dawn where government intervention in private affairs has become justified by law?

But, you will say, will these incandescent light bulbs only be substituted by mercury containing CFLs? What does the Act prescribe about the mercury in these lamps? On two places in section 321, the word "mercury" is mentioned.

- *Not later than 1 year after the date of enactment of this Act, the Secretary, in cooperation with the Administrator of the Environmental Protection Agency, shall submit to Congress a report describing recommendations relating to the means by which the Federal Government may reduce or prevent the release of mercury during the manufacture, transportation, storage, or disposal of light bulbs.* (HR6-95)
- *The Administrator shall develop guidelines for the use of energy efficient lighting technologies that contain mercury in child care centers in public buildings.* (H.R.6-100)

Are you reassured after these elucidations? I don't think so. Even worse, a large budget will be spend to promote these mercury containing lamps!

There is authorized to be appropriated to carry out this subsection \$10,000,000 for each of fiscal years 2009 through 2012. And for what purpose? Will consumers be informed about the dangers of the mercury containing CFLs? No, quite the reverse, the budget of \$40,000,000 (during 4 years) will (among other things) help consumers understand the lamp labels and make energy-efficient lighting choices that meet the needs of consumers.

Yes, you just read the word "choice". Choice between which lamp types, when only CFLs will be affordable for the average household?

Meanwhile, the ban on incandescent light bulbs has been under fire twice in 2011:

1. **7/15/2011:** The House of Representatives Lawmakers passed an amendment *to the energy- spending legislation for fiscal year 2012 barring the Energy Department from implementing or enforcing lighting-efficiency standards set by 2007 legislation. The law would effectively push the traditional bulbs off store shelves, starting with the 100-watt version next year.* ([www.bloomberg.com](#)) *The House has voted to delay the de facto ban on incandescent light bulbs for at least a year. It is the first step in restoring consumer choice and ending government intrusion into our homes.* ([Rep. Joe Barton](#))
2. **12/16/2011:** *House and Senate negotiators on Thursday night reached a tentative agreement on a \$1 trillion omnibus spending bill that would avert a government shutdown, the Republican chairman of the House Appropriations Committee announced.* ([thehill.com](#)) *The deal agreed to in Congress merely deprives the Department of Energy the funds to enforce the ban for 2012. The ban is still on the books — so the DOE may very well get the money next year or the year after or who knows when.* ([junkscience.com](#))

The reaction of Steven Nadel Executive Director of ACEEE was: *Contrary to misinformation being spread by some lamp standard opponents, the standards do not ban incandescent lamps, but merely require incandescent lamps to be more efficient. Five manufacturers are now producing and selling efficient incandescent bulbs that meet the standards. With the new budget provision, the law is still in effect, but the Department of Energy cannot spend money to enforce it.* ([ACEEE](#))

More Rare Earth Materials will be needed: *In the United States, two sets of lighting energy efficiency standards that come into effect in 2012 will likely increase demand for fluorescent lamps containing phosphors made with europium, terbium and yttrium. The first set of standards applies to general service bulbs. The second set of standards applies to linear fluorescent lamps (LFLs). The projected increase in U.S. demand for CFLs and efficient LFLs corresponds to a projected increase in global CFL demand, suggesting 6 upward price pressures for rare earth phosphors in the 2012–2014 timeframe, when europium, terbium and yttrium will be in short supply. In the future, light-emitting diodes (which are highly efficient and have much lower rare earth content) are expected to play a growing role in the market, reducing the pressure on rare earth supplies.* ([U.S. Department of Energy, Critical Materials Strategy, December 2011, p. 5.](#))

Remark: *Sylvania is producing halogen incandescent lighting at a converted incandescent bulb manufacturing facility in Pennsylvania (Whoriskey 2010).* (DOE 2011, p. 24)

2. The EPA calculation of the mercury emission by CFLs

We will critically go through the publication of ENERGY STAR: [Frequently Asked Questions. Information on Compact Fluorescent Light Bulbs \(CFLs\) and Mercury, November 2010](#). In the mentioned writing, a comparison is made between the total mercury emission from the use of an incandescent lamps and of a CFL. The following calculation is found in [Vicki Calwell and Peter Banwell, CFLs, Mercury and Mayhem!, 2008](#) :

Table 1. Net Mercury Emissions Benefit from Using a CFL

Lamp Type	Watts	Hours of Use	kWh Use	National Average Hg Emissions	Hg from Electricity Use	Hg Emissions from Landfilling	Total Hg
CFL	13	8,000	104	0.012	1.2	0.4	1.6
Incandescent (8 @ 1000 rated hours)	60	8,000	480	0.012	5.8	0	5.8

EPA concludes: *Because CFLs also help to reduce greenhouse gasses, other pollutants associated with electricity production, and landfill waste (because the bulbs last longer), they are clearly the environmental winner when compared to traditional incandescent light bulbs.*

Our remarks

- EPA has not factored in the mercury pollution in all phases that precede and follow the use of these lamps. Also, more attention has to be given to the noxious consequences of this lamp during the use phase.
 - The processing of cinnabar is associated with elevated atmospheric Hg emissions.* (UNEP_cost_benefit2008, p. 93) Some reopened mercury mines in China have ruined the environment and the inhabitants. Witness the fact of dead rivers, poisoned fields and ailing inhabitants.
 - Any manufacturing process that employs Hg will produce Hg vapor that potentially exposes the workers.* (UNEP_cost_benefit2008, p. 115) In a CFL factory, 121 out of 123 employees had excessive mercury levels. One man's level was 150 times the accepted standard. (Extracts from the article of The Times on line dated May 3, 2009) Also, the Hg emissions from coal-fired energy sources for the energy used in manufacturing must be factored in.
 - The high proportion of blue in CFLs can have a negative impact on health. It can be a trigger for depression. Several CFLs emit UV-radiation. Some persons are allergic to it.
 - Broken CFLs in rooms can have very noxious consequences to children.
 - During the recycling process, the distillation requires a substantial amount of energy. If the electricity is supplied by coal fired sources, a new emission of mercury will take place.
 - During the transportation from the reprocessing factories back to the lamp factories, a new emission of mercury can be generated if e.g. bunker oil is used to ship back mercury to China. However, I suppose that a return path for mercury does not exist at this level.
- EPA compares an incandescent lamp of 60W with a CFL of 13W. According to a VITO-report (Flemish Institute for Technological Research, *Final Report. Domestic lighting*, 2009, p. 112-113) it should be better to use the equivalence of 4:1. So, a 60W incandescent lamp should be replaced by a 15W CFL. *This requirement compensates for the lower real life performance of the CFL compared to GLS [i.e.: 'General Lighting Service lamp' or incandescent lamp] due to lower LLMF[Lamp Lumen Maintenance Factor, see p. 201] (ageing factor, (...)), temperature effects, potential influence from lamp position and a compensation for the low start performance due to warm-up time.*
- Hours of Use: 8,000 hours. According to several consumers' organizations, the tested lifetime of the CFL does not always match the promised lifetime. *One of the most common complaints of customers is premature failure after only a few hours, days, weeks or years, way short of the life rate stated on the package.* [The New York Times](#) brought attention to this problem. So, a customer who buys a CFL doesn't know if the lifetime indicated on the package will be reached.
- According to EPA, the national average of mercury emissions (mg/kWh) due to the electricity production, is 0.012 mg. It is obvious that the mercury emissions from power plants are decreasing. *In the United States, EPA promulgated a regulation in 2005 to reduce criteria air pollutant emissions from power plants, the Clean Air Interstate Rule (CAIR). The U.S. EPA calculated the estimated costs and some of the benefits of that regulation. The CAIR rule is primarily aimed at reducing emissions of SOx and NOx from large coal-fired power plants, but as a co-benefit will result in reductions of mercury emissions. The CAIR rule will achieve the majority of its mercury reductions as a co-benefit from controls for SO₂. Applying SO₂ controls (or other multi-pollutant approaches) are more cost-effective at reducing mercury than direct mercury control. EPA also promulgated the Clean Air Mercury Rule (CAMR) which was targeted to specifically further reduce mercury emissions from coal-fired power plants. The co-benefits of CAIR were estimated to reduce mercury emissions to 34.5 metric tonnes in 2010; the specific requirements of CAMR were estimated to further reduce mercury emissions to 13.6 tonnes by 2020. This could cost the U.S. electric power industry about US\$ 11.3 billion.* (UNEP_cost_benefit2008, p. 21) More interesting information about the reduction of mercury emissions from coal usage can be found on p.15 to p. 23 of this UNEP report.

Update August 13, 2012: I made a new calculation with the figures of 2010.

- EPA (see [NRCD's report](#)): Electric Sector Mercury Air Pollution: 68,199 lb, i.e. 30935 kg.

- NEI (Nuclear Energy Institute): Total Electricity Generation 2010 in US: 4,125,059,900 MWh.

So, the national average mercury emissions amount to 0.0075 mg/kWh for the year 2010. The figure of 0.012 is more than outdated. On this wrong base, EPA told us that CFLs are more environment friendly:

- Mercury emission from electricity use of a CFL 13W: $0.013 \text{ kW} \times 8000 \text{ h} \times 0.012 \text{ mg/kWh} = 1.2 \text{ mg}$. The mercury content in the lamp is 4 mg. The total mercury emission is **5.2 mg** (assuming that no CFL bulb has been recycled).
- Mercury emission from electricity use of 8 incandescent lamps (a life time of 1000 hours is estimated) of 60W: $0.06 \text{ kW} \times 8000 \text{ h} \times 0.012 \text{ mg/kWh} = \mathbf{5.76 \text{ mg}}$. An incandescent lamp contains no mercury.

I revised the EPA calculation using the recent figure:

- Mercury emission from electricity use of a CFL 13W: $0.013 \text{ kW} \times 8000 \text{ h} \times \mathbf{0.0075 \text{ mg/kWh}} = 0.78 \text{ mg}$. The mercury content in the lamp is 4 mg. The total mercury emission is **4.78 mg**.
- Mercury emission from electricity use of 8 incandescent lamps of 60W: $0.06 \text{ kW} \times 8000 \text{ h} \times \mathbf{0.0075 \text{ mg/kWh}} = \mathbf{3.6 \text{ mg}}$.

Update January 28 2013: In the report of UNEP, *Global Mercury Assessment 2013*, p. 16, the mercury emission from power plants in the U.S. is estimated at 27 tonnes in 2010. This gives a mercury emission of **0.00655 mg/kWh**. This number is still lower than the just mentioned number.

This means that CFLs are more polluting than incandescent bulbs! The lower is the mercury emission from the coal fired power plants, the longer must be the lifetime of the CFL to compensate for the mercury content of the lamp. In most western countries, this mercury emission has reached such a sufficient low level that the mercury content of CFLs is larger than the gains that can be made. Here we must report a serious flaw in the reasoning of EPA. CFLs are justified because the level of mercury emission by power plants has reached a certain noxious level. It must be clear: more CFLs will not be a solution to the high mercury emissions by power plants! The only solution will be to reduce the mercury emission from coal fired power plants. When electricity production occurred without mercury emission, only CFLs would release mercury in the environment.

5. Mercury in landfills. EPA (FAQ; November 2010): *Most mercury vapor inside fluorescent light bulbs becomes bound to the inside of the light bulb as it is used. EPA estimates that the rest of the mercury within a CFL – about 11 percent – is released into air or water when it is sent to a landfill, assuming the light bulb is broken. EPA, 2008: A recent collaborative study by researchers at EPA and other environmental consulting firms estimated 10% of the mercury contained in a fluorescent lamp is released as air emissions, 1% is released to water, and 89% is held in soil (contained in landfills) (Cain et al. 2007). As a consequence, only $(4 \text{ mg} \times 11\%) = 0.44 \text{ mg}$ mercury remains! As if by magic, 89% of the mercury content has disappeared! That the soil is contaminated with a mercury solution seems not be a problem for EPA. The argumentation proceeds. Therefore, if all 272 million CFLs sold in 2009 were sent to a landfill (versus recycled, as a worst case) – they would add 0.12 metric tons, or 0.12 percent, to U.S. mercury emissions caused by humans.*

One can only remark that EPA underestimates the pollution of landfills by broken CFLs. *Also, electricity generation emits mercury in metallic form and in low concentration because dissipated over a large area. Metallic mercury doesn't easily become part of the food chain. However, when a CFL bulb breaks in a landfill, there is much less dissipation and bacteria convert metallic mercury into methyl-mercury which is 100 times more soluble in fat. (Commission Staff Working Document, Accompanying document to the Commission Regulation implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirement for non-directional household lamps, 18-3-2009, p.79)*

6. The luminous efficiency is not mentioned in the calculation. This factor is however needed if one wants to calculate the mercury emitted over lifetime per lumen per hour.

3. Net Mercury Emissions Benefit from Using a CFL (answer to EPA)

EPA had to use mainly two tricks to make their calculation favourable to CFLs:

- use the old number of mercury emission (0.012 mg/kWh instead of 0.0065 mg/kWh);
- minimize the mercury pollution in landfills.

Now we accept a national mercury emission of 0.0065 mg/kWh and factor in 100% mercury from the CFLs in landfills. As in the EPA calculation, we assume that all CFLs are inappropriately discarded with unsorted waste. The result is:

Lamp Type	Watts	Hours of Use	kWh Use	National Average Hg	Hg from Electricity	Hg Emissions form	Total Hg
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				Emissions	Use	Landfilling	
CFL	13	8,000	104	0.0065	0.68 mg (instead of 1.2 mg)	4 mg	4.68 mg (instead of 1.6 mg)
Incandescent	60	8,000 (8 bulbs)	480	0.0065	3.14 mg (instead of 5.76 mg)	0 mg	3.14 mg

Conclusion: Regarding the environmental impact, the incandescent lamp is a better choice than de CFL! Assuming all 290 million CFLs sold in 2007 are landfilled, they will contribute to a supplementary mercury emission of 446 kg ((4.68 – 3.14 mg) * 290 million)! By banning all CFLs the emission of mercury would be reduced a lot. In future, by further reducing the mercury emission by power plants, the CFLs will become still more obsolete.

You can [test it yourself!](#)

4. A comparative test between three lamp types

The eco-efficiency of a CFL depends mainly on four factors:

- the mercury emission into the air from power stations;
- the effective luminous efficiency;
- the lifetime of the lamp;
- the amount of mercury in the lamp.

When one wants to investigate these items, a serious problem arises: no figures are given by the manufacturers about the amount of mercury in their lamps. This is very strange because mercury is a toxic product and all consumers should be warned about it. Instead of this warning, these bulbs are almost given in the hands of children. We can only conjecture that CFLs with a longer lifetime contain more mercury. On the other hand, CFLs with a higher wattage show a higher luminous efficiency. A short inquiry of recent advertising brochures let see in the category with a wattage lower than 10 W, a luminous efficiency of 50 lumen/watt, and a luminous efficiency of 57 lm/watt in the category between 10 and 20 W. The following table gives an overview of the eco-efficiency of CFLs. No losses due to power factor are factored in. All calculations are made in the supposition that 20% of the CFLs are disposed of safely. A CFL of 14W is compared with an incandescent bulb of 60W (lifetime 1000 h) and with a halogen lamp of 42W (lifetime 2000 h). Further, we assume the mercury emission into the air from the power stations is 0.0075 mg per kWh and the mercury content in the CFL is 4 mg in the CFL (to compare with the example of ENERGY STAR).

A more correct calculation of the mercury emissions:

Mercury emitted to air for the production of 1 kWh (mg)	0.0065 mg		
Percentage of collected CLF's	20%		
	Clear incandescent lamp 60W	New halogen lamp 42W	Compact Fluorescent Lamp 14W
Average wattage	60W	42W	14W
Lifetime (hours)	1000 h	2000 h	8000 h
Total kWh during lifetime	60 kWh	84 kWh	112 kWh
Lumen per lamp	710 lm	630 lm	820 lm
Effective luminous efficiency (lumen per watt)	11.8 lm	15 lm	58.6 lm
Mercury emitted during the use phase (mg)	0.39 mg	0.55 mg	0.73 mg
Mercury content in lamp	0	0	4 mg
Mercury emitted by burned out lamps (mg)	0	0	3.2 mg
Total mercury emission per lamp	0.39 mg	0.55 mg	3.93 mg

Mercury emitted over lifetime per lumen per hour (nanogram)	0.55 nanogram	0.44 ng	0.60 ng
Result of the calculation of the total mercury emission	Regarding environmental impacts, the new halogen lamp is the best choice.		

You can [test it yourself!](#) Fill in watts and lumen from existing lamps!

The more the mercury emission to the air from the electricity production will be low, the more the incandescent lamps will be better than CFLs regarding the environmental impacts. We repeat that this calculations does not factor in

- the mercury emissions from any coal-fired energy sources for the energy used in manufacturing and recycling CFLs
- or the mercury emission from the exploitation of the mercury mines and the manufacturing process releases.

The results of this example has far-reaching consequences. Here it is proven that Hg-free substitutes exist that are viable for the lighting of rooms, if one factors in the eco-efficiency of the lamps. The consequence is that CFLs are obsolete and should be phased out as soon as possible.

Moreover, the technology of halogen and incandescent lamps gives a much better quality of light than that of CFLs. The technology of CFLs is just wrong because it is a toxic technology that is given in the hands of the consumers. Nevertheless, from the beginning, lighting manufacturers have almost exclusively mobilized on the CFL technology. Politicians are also responsible for this evolution towards the misuse of mercury for lighting purposes.

5. Arthur Firstenberg (Cellular Phone Task Force) wrote this letter at the end of 2013:

This is your last chance to stock up on ordinary light bulbs, because it will be illegal to manufacture or import them into the United States as of January 1, 2014. Please remind everyone.

In case you think it will be easy to travel to another country and bring some back with you, most countries in the world either have already banned incandescent bulbs or are in process of doing so.

The U.S., Canada, Malaysia and South Korea are banning them as of next week. Cuba banned them in 2007, Australia in 2010, the UK in 2011. The entire European Union banned them as of September 1, 2012, and Israel banned bulbs over 60 watts in January 2012. Tajikistan prohibited them as of 2009, and Russia plans to complete its phase-out next year. China, where most incandescents are now manufactured, is scheduled to ban 60 watt bulbs as of October 1, 2014, and 15 watt bulbs two years later. Mexico and all other Central American countries have agreed to end sales of incandescents by the end of 2016, and the EconomicCommunity of West African States plans a complete phase-out before 2020.

The only country I have discovered where a ban is not underway is New Zealand, which returned to sanity in 2008 and scrapped plans to prohibit the bulbs. I hope that is still true. Perhaps my New Zealand contacts can update me.

Also, although India's official policy is to eventually get rid of ordinary, cheap, safe bulbs that emit warm and friendly light, it is finding it difficult to enforce a ban on a billion less-than-wealthy people.

Although halogen replacements are being touted by some as a safe (though more expensive) variation on the incandescent bulb that is still legal in the United States (the European Union has plans to ban them too by September 1, 2016), they produce a hotter, bluer light, emit more ultraviolet, and contain iodine or bromine.

The war on traditional light bulbs is being driven by profit. There is no valid environmental reason to ban them. All the alternatives are much more energy-intensive (and therefore costly and polluting) to manufacture, and even the waste heat given off by incandescents (at least in middle and high latitudes) contributes to the heating of our homes during large parts of the year and must be replaced by gas or oil.

I need not mention the violation of human rights that is occurring. Large numbers of people with disabilities are unable to use any of the alternatives.

If anyone has information or discussion to contribute on this subject, please email or call me.

Arthur Firstenberg (write to [Cellular Phone Task Force](#))

6. Sora is again asking the EPA to reconsider Energy Star efficacy requirements for SSL lamps.

[Sora](#), a Silicon Valley startup founded in 2008, is moving ahead with plans for making energy-efficient GaN-on-GaN LED light bulbs to displace halogen-based lamps that significantly improve brightness, while becoming more like incandescents in look and feel.

The group is now asking the EPA to require lamps in the 80–90 CRI range to deliver 5 lm/W higher efficacy than lamps with CRI above 90, recognizing that high CRI is documented to reduce efficacy. Soraa and the other petitioners are concerned because Energy Star recognition is essentially a de facto requirement for customers seeking rebates or incentives for investing in energy-efficient lighting upgrades. (...) "Poor light quality ruined many consumers' confidence in compact fluorescents," said Soraa's Krames. "The Energy Star qualification must be associated with LED lamps that provide a better quality of light; otherwise, the program will start to lack credibility with end users and the low adoption rate history of CFLs will be repeated by LED lamps."

The EPA has said that it would still welcome comments on the issue. But with the release of the latest draft it also said that there were plenty of high-CRI products on the market already that met the requirements. ([Source: ledsmagazine.com](#))

Conclusions

- Why is the people of America deprived from the elementary information concerning the total phasing out of incandescent and halogen lightbulbs after 2014? In other countries, the incandescent lamps with enhanced efficiency will remain allowed. Why has the US-government chosen the CFL as the best choice without making any objection to the mercury content? Let's hope that the freedom of choice will be restored before 2013.
- EPA must stop to spread wrong information about the mercury pollution in landfills and about the eco-efficiency of CFLs. When all processes are factored in, CFLs are not the best choice, regarding the environmental impacts. Our result is in clear contradiction with the EPA conclusion that the mercury emission of an incandescent lamp is 3.4 times larger than the emission of a CFL.
- The information of the amount of mercury contained in a fluorescent lamp is essential to deduce the impact of the lamp on the environment. Nevertheless, no indication of the amount of mercury is found on the CFLs.
- It is a shame that EPA promotes the filthy lucre among citizens knowing very well the irreparable noxious effects from the mercury in CFLs and elsewhere. It is much cheaper to prevent the pollution than to clean it up afterwards. Is profit more valuable to the government than the planet?
- Because of the reasons summed up on this page, CFLs should be banned immediately. Alternatives without mercury are available: halogen lamps, incandescent lamps and LEDs. When substitutes exist for mercury containing products, these substitutes have to be promoted and the mercury containing products have to be counteracted. The ban on incandescent lamps must be lifted. EPA has to create incentives for switching to Hg-free lamps. A cleaner environment tolerates only Hg-free products if viable. For other fluorescent lighting products however, at this moment, substitutes hardly exist.
- **Remark:** It is very important to stress that **CFLs and LEDs produce a different type of light in comparison with incandescent light. So, they cannot be a substitute products!** A ban of incandescent light bulbs has led to a very reduced choice of light products.

N.B.: [Obama mocks critics of incandescent light bulb bans!](#)

The thesis of Dr. Willie Soon

June 28, 2015. "Supreme Court rules against EPA, for the poor" "The Supreme Court decided today against EPA's rule to limit trace emissions of mercury and other substances from power plants. The Court held that EPA failed to perform a meaningful cost-benefit analysis in promulgating the rule. Justice Antonin Scalia, writing for the majority, held that, "EPA strayed well beyond the bounds of reasonable interpretation in concluding that cost is not a factor relevant to the appropriateness of regulating power plants." (Source: <http://icecap.us/index.php>)

July 21, 2011. Willie Soon argues in his paper, *A Scientific Reply to Specific Claims and Statements in EPA's Proposed NESHAP Rule, Focusing on Mercury Emissions Issues*, Science & Public Policy Institute (SPPI) Reprint Series, July 21, 2011. (NESHAP: National Emission Standards for Hazardous Air Pollutants)

According to the latest government, university and independent studies (all of them accessible, but many of them ignored or dismissed by the EPA's literature search):

- All of America's coal-burning power plants together emit about 41-48 tons of mercury per year.
- However, US forest fires discharge roughly the same amount: at least 44 tons per year. (Trees absorb naturally occurring mercury from rocks, soils, water and air, store it in their leaves and branches, and release it when they burn. Forest fires release still more mercury from superheated rocks and soils, and fires worldwide add still more mercury to the global atmosphere.)
- The cremation of human remains emits 26 tons of mercury per year (from tooth filling amalgams).
- Chinese power plants eject 400 tons per year, while Indian power plants add still more; and
- Volcanoes, subsea vents, geysers and other sources release 9,000 to 10,000 additional tons per year.

All these mercury (and other) emissions enter the global atmospheric system, become part of the air mass circulating over the United States, and contribute to deposition into US and other North American waters. **Thus, America's coal-fired electrical generating units are responsible for approximately 0.5% of mercury found in the air Americans breathe.**

Even eliminating every milligram of this mercury will not affect or reduce the other 99.5% in America's atmosphere.

(p. 2)

- *Man-made Hg emission in the U.S. is very small when compared to natural Hg emission through soil evasions and terrestrial vegetations in the U.S. and Canada.* (p. 15)
- *The range of natural variation of atmospheric mercury concentration and deposition flux for the past 650,000 years has been measured and estimated. "The results clearly confirmed large natural changes in atmospheric mercury fluxes without any human sources.(...) Thus, the regulatory goal should be, not to cure "all ills", but to seek science-based commonsense management of exposure risk to eternally present and uncontrollable MeHg."* (p. 16)

The Environmental Protection Agency has promoted much more stringent controls for mercury and other emissions from electricity generating facilities.(...) The new rules would force utility companies to spend billions of dollars retrofitting or dismantling dozens of existing coal-fired power plants. (p. 1)

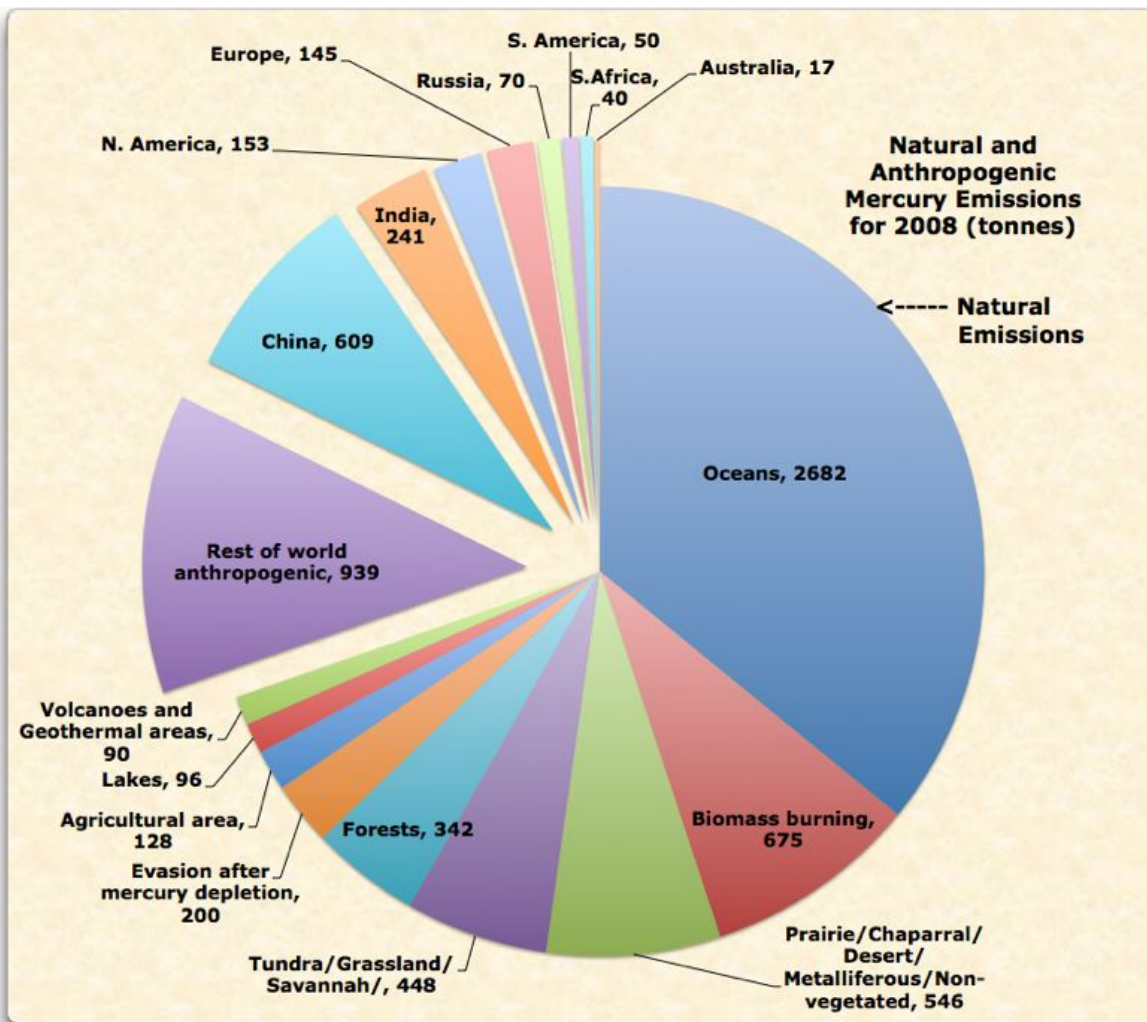
My comment:

Mercury is also found in nature but reducing the anthropogenic emission remains a commendable initiative. I agree with the thesis that without international agreements, the mercury content in the air will not change a lot. The estimated global anthropogenic emissions of mercury to air in 2005 was (UNEP, Technical Background Report to the Global Atmospheric Mercury, 2008, p. 40):

- 1,280 tons in Asia (i.e. mainly in China) (66.5%)
- 153 tons in North America (7.94%)
- 150 tons in Europe (7.78%)

Many people are advocates of precautionary measures concerning the emission of mercury and do not fully agree with the conclusions of Dr. Willie Soon.

This picture shows the partition of the natural and the anthropogenic mercury emissions for 2008.



See ["The EPA's Mercurial Madness"](#), written by Willis Eschenbach.

References

- (UNEP_cost_benefit2008): *Report presenting the costs and benefits for each of the strategic objectives*. Addendum. 14 July 2008.
- DOE 2011: [U.S. Department of Energy, Critical Materials Strategy, December 2011, p. 23](#)

Links

- [The dangers and fraud behind the forced use of Compact Fluorescent Lights \(CFLs\)](#), Gary Friedman 15 February 2011
- [Many consumers in the dark about dangers of CFL bulbs](#), www.examiner.com, January 4, 2012.
- [CFL bulbs: shedding light on misleading performance claims](#), www.examiner.com, January 12, 2012.

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