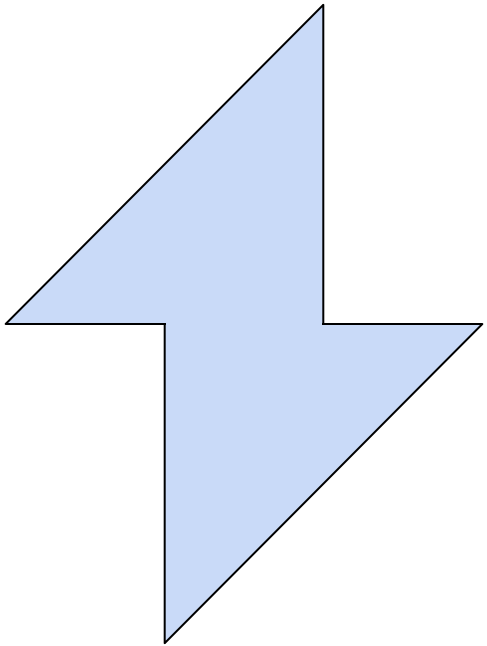


Nuclear Power Pros and Cons

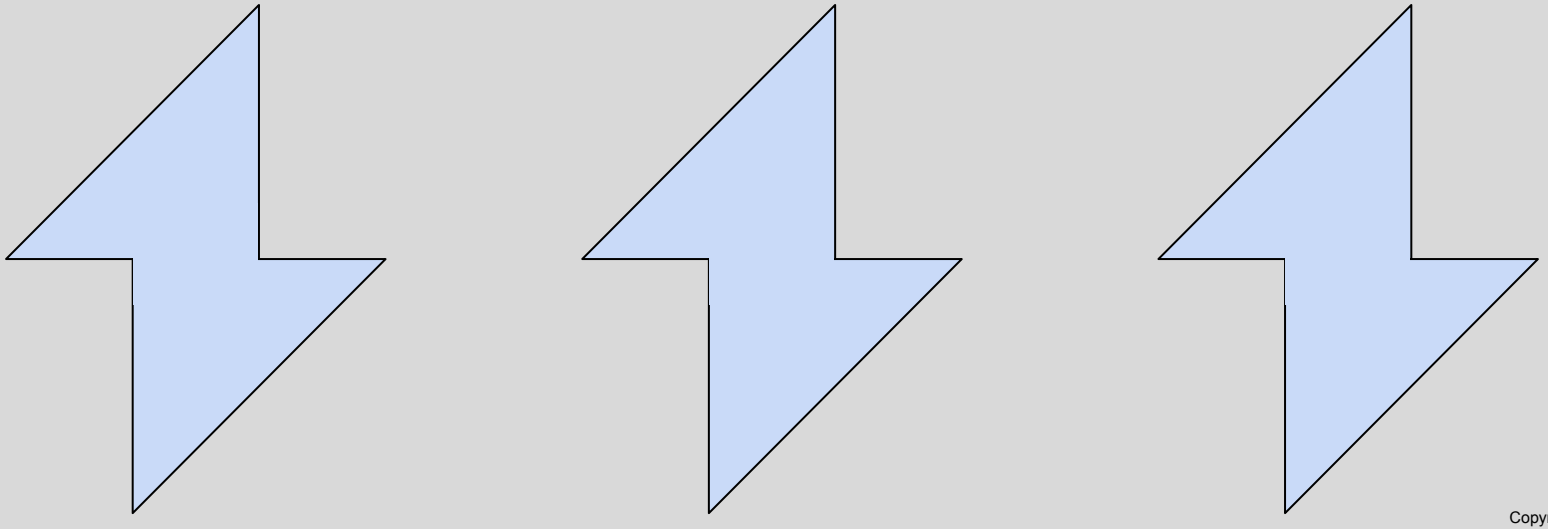
By Joel King

Pros

1. Fewer carbon emissions.
2. Kills fewer people for the energy we get.

Cons

1. Accidental nuclear waste releases.
2. Power plants are expensive.



1896 - Svante Arrhenius and Climate Change

- Has been understood for 120+ years.
- Simple to disprove, but never disproven.
- “Popular Mechanics”, March 1912: Burning coal.
- Only more refined over time.

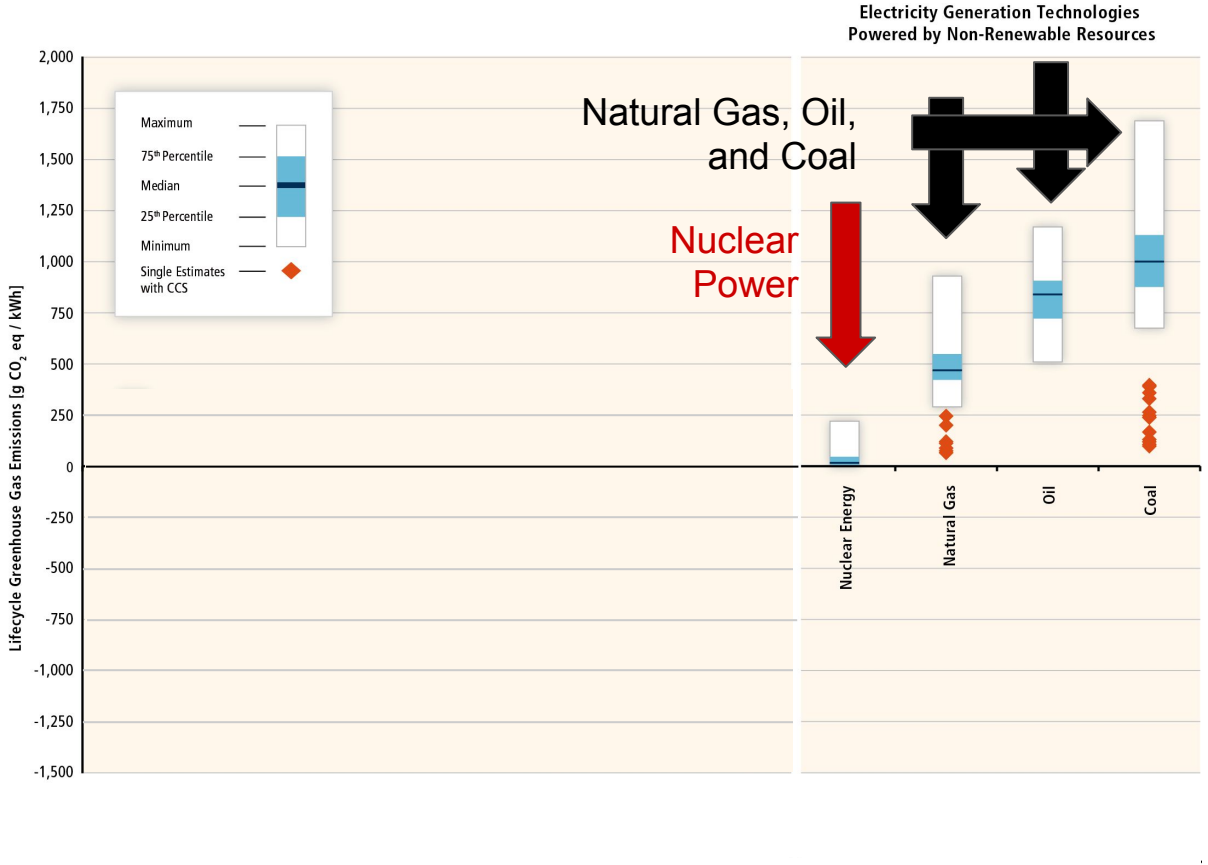
TABLE VII.—*Variation of Temperature caused by a given Variation of Carbonic Acid.*

Latitude.	Carbonic Acid = 0·67.					Carbonic Acid = 1·5.					Carbonic Acid = 2·0.					Carbonic Acid = 2·5.					Carbonic Acid = 3·0.				
	Dec.–Feb.	March–May.	June–Aug.	Sept.–Nov.	Mean of the year.	Dec.–Feb.	March–May.	June–Aug.	Sept.–Nov.	Mean of the year.	Dec.–Feb.	March–May.	June–Aug.	Sept.–Nov.	Mean of the year.	Dec.–Feb.	March–May.	June–Aug.	Sept.–Nov.	Mean of the year.	Dec.–Feb.	March–May.	June–Aug.	Sept.–Nov.	Mean of the year.
70	−2·9	−3·0	−3·4	−3·1	−3·1	3·3	3·4	3·8	3·6	3·52	6·0	6·1	6·0	6·1	6·03	7·9	8·0	7·9	8·0	7·95	9·1	9·3	9·4	9·4	9·3
60	−3·0	−3·2	−3·4	−3·3	−3·22	3·4	3·7	3·6	3·8	3·62	6·1	6·1	5·8	6·1	6·02	8·0	8·0	7·6	7·9	7·87	9·3	9·5	8·9	9·5	9·3
50	−3·2	−3·3	−3·3	−3·4	−3·3	3·7	3·8	3·4	3·7	3·65	6·1	6·1	5·5	6·0	5·92	8·0	7·9	7·0	7·9	7·7	9·5	9·4	8·6	9·2	9·17
40	−3·4	−3·4	−3·2	−3·3	−3·32	3·7	3·6	3·3	3·5	3·52	6·0	5·8	5·4	5·6	5·7	7·9	7·6	6·9	7·3	7·42	9·3	9·0	8·2	8·8	8·82
30	−3·3	−3·2	−3·1	−3·1	−3·17	3·5	3·3	3·2	3·5	3·47	5·6	5·4	5·0	5·2	5·3	7·2	7·0	6·6	6·7	6·87	8·7	8·3	7·5	7·9	8·1
20	−3·1	−3·1	−3·0	−3·1	−3·07	3·5	3·2	3·1	3·2	3·25	5·2	5·0	4·9	5·0	5·02	6·7	6·6	6·3	6·6	6·52	7·9	7·5	7·2	7·5	7·52
10	−3·1	−3·0	−3·0	−3·0	−3·02	3·2	3·2	3·1	3·1	3·15	5·0	5·0	4·9	4·9	4·95	6·6	6·4	6·3	6·4	6·42	7·4	7·3	7·2	7·3	7·3
0	−3·0	−3·0	−3·1	−3·0	−3·02	3·1	3·1	3·2	3·2	3·15	4·9	4·9	5·0	5·0	4·95	6·4	6·4	6·6	6·6	6·5	7·3	7·3	7·4	7·4	7·35
−10	−3·1	−3·1	−3·2	−3·1	−3·12	3·2	3·2	3·2	3·2	3·2	5·0	5·0	5·2	5·1	5·07	6·6	6·6	6·7	6·7	6·65	7·4	7·5	8·0	7·6	7·62
−20	−3·1	−3·2	−3·3	−3·2	−3·2	3·2	3·2	3·4	3·3	3·27	5·2	5·3	5·5	5·4	5·33	6·7	6·8	7·0	7·0	6·87	7·9	8·1	8·6	8·3	8·22
−30	−3·3	−3·3	−3·4	−3·4	−3·35	3·4	3·5	3·7	3·5	3·52	5·5	5·6	5·8	5·6	5·62	7·0	7·2	7·7	7·4	7·32	8·6	8·7	9·1	8·8	8·8
−40	−3·4	−3·4	−3·3	−3·4	−3·37	3·6	3·7	3·8	3·7	3·7	5·8	6·0	6·0	6·0	5·95	7·7	7·9	7·9	7·9	7·85	9·1	9·2	9·4	9·3	9·25
−50	−3·2	−3·3	—	—	—	3·8	3·7	—	—	—	6·0	6·1	—	—	—	7·9	8·0	—	—	—	9·4	9·5	—	—	—
−60																									

266 Prof. S. Arrhenius *on the Influence of Carbonic Acid*

Near Zero Carbon

- The Intergovernmental Panel on Climate Change (2011)
- Grams of greenhouse gas emissions per kilowatt hour.
- Nuclear is near zero.
- Natural Gas, oil, and coal range from 400-1000 or higher.



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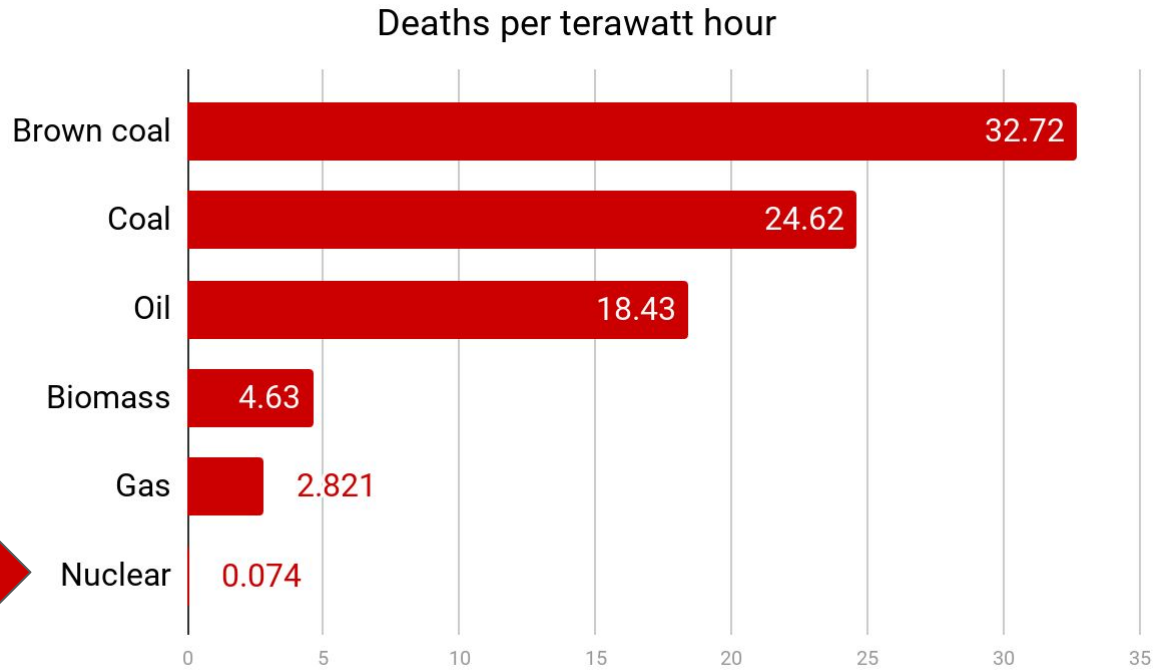
Safer

Includes:

- Air pollution
- Accidents
- Cancer

More than 330 will die from coal for every 1 from nuclear power.



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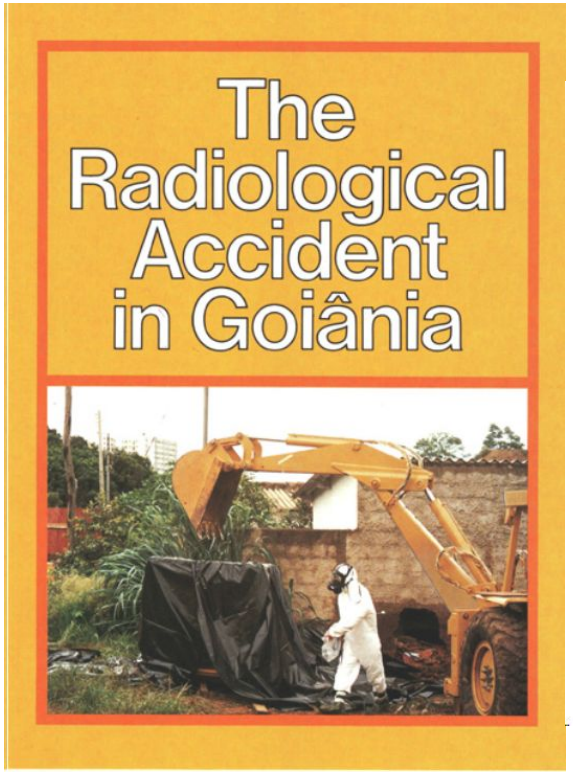
Nuclear Waste

Cesium-137:

- 30 year half-life.
- Easily dissolved in water.

Goiânia, Brazil:

- Abandoned medical facility.
- Glowing blue dust.
- Necrotized flesh and lesions.
- 4 dead, 220 treated for radiation poisoning.



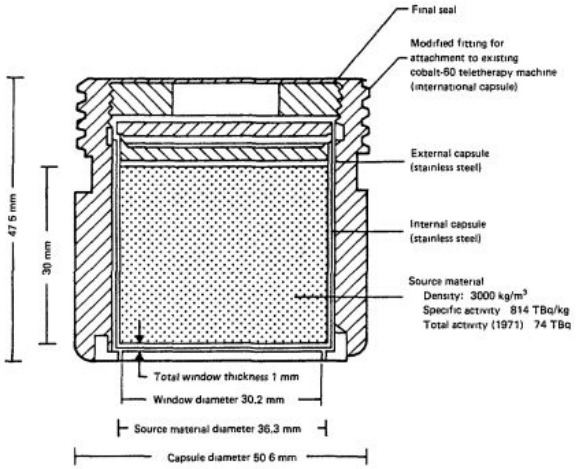


FIG. 6. Cross-sectional diagram of an international standard capsule. Such a capsule of radioactive caesium chloride was broken open in the accident in Goiânia. The source was compacted to a coherent mass and sealed within two stainless steel capsules

Fukushima Today

- Tsunami in March, 2011 caused the Fukushima accident.
- All three nuclear reactors melted down.
- March, 2018, Cesium-137 is still leaking seven years later.

Seven years on, radioactive water at Fukushima plant still flowing into ocean, study finds. (2018, March 29). Retrieved February 12, 2019, from https://www.japantimes.co.jp/news/2018/03/29/national/seven-years-radioactive-water-fukushima-plant-still-flowing-ocean-study-finds/

One Nuclear Power Plant - ‘Only’ $20,000,000,000!

- Hitachi no longer building UK nuclear plant.
- Spent $2,800,000,000, then stopped.
- UK government wouldn’t agree to cost.
- Toshiba shutting down UK plant already in operation.
- No one would buy it.

Shane, D. (2019, January 17). Hitachi shelves $20 billion nuclear power plant in UK. Retrieved February 12, 2019, from https://www.cnn.com/2019/01/17/business/hitachi-nuclear-power-wales-uk/index.html

Pros

1. Fewer carbon emissions.
2. Kills fewer people for the energy we get.

Cons

1. Accidental nuclear waste releases.
2. Power plants are expensive.

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