NUCLEAR MONITOR

June 07, 2023 | Issue #907

A PUBLICATION OF WORLD INFORMATION SERVICE ON ENERGY (WISE) AND THE NUCLEAR INFORMATION & RESOURCE SERVICE (NIRS)

WISE/NIRS Nuclear Monitor

The World Information Service on Energy (WISE) was founded in 1978 and is based in the Netherlands.

The Nuclear Information & Resource Service (NIRS) was founded in the same year and is based in the U.S. WISE and NIRS joined forces in the year 2000 to produce Nuclear Monitor.

Nuclear Monitor is published in English, 10 times a year, in electronic (PDF) format only. Back issues are published on the WISE website two months after being sent to subscribers (www.wiseinternational.org/nuclear-monitor).

SUBSCRIPTIONS
10 issues
NGOs / individuals 67,50 Euros
Institutions / Industry 235 Euros
US and Canada: Contact NIRS for details (nirs@nirs.org)
All other countries: Subscribe via the WISE website
www.wiseinternational.org
ISSN: 2542-5439

CONTACTS
WISE
info@wiseinternational.org
www.wiseinternational.org

NIRS
nirs@nirs.org
www.nirs.org

Nuclear Monitor
monitor@wiseinternational.org
www.wiseinternational.org/nuclear-monitor

Monitored this issue:

PFAS and the Nuclear Industry

The nuclear industry, worldwide facing many challenges due to cost- and time overruns, is having trouble with a new issue; a possible ban on products containing PFAS. Nuclearеurope, a European pro-nuclear lobby organization wrote an interesting article and published it on her website. The conclusions are quite clear. The ban on PFAS could pose a severe threat to the nuclear industry. Therefore, nuclearеurope is lobbying for exceptions and derogations to maintain the use of PFAS.

Although the Nuclear Monitor normally would not publish articles of pro-nuclear lobbyist-groups, because of the huge possible implications of this issue we decided to break the rule.

This article is published May 25 on https://www.nuclearеurope.eu/blog/addressing-the-implications-of-the-pfas-ban-on-the-nuclear-industry

"PFAS are a large class of thousands of synthetic chemicals that are used throughout society. They are commonly used in textiles, sealants, gaskets, lubricants, and many other applications. Their persistence in the environment and potential adverse health effects have raised concerns. On 13 January 2023, a dossier was submitted to the European Chemicals Agency (ECHA) by Denmark, Germany, the Netherlands, Norway, and Sweden, aiming to reduce PFAS emissions into the environment. Authorities estimate that without action, approximately 4.4 million tonnes of PFAS could enter the environment over the next three decades.
With the potential restrictions proposed encompassing a wide range
of PFAS compounds, the nuclear sector must identify their uses and collaborate to address this critical matter.

Scope of the Ban
The proposed ban targets substances containing fully fluorinated methyl (CF3-) or methylene (-CF2-) carbon atoms, excluding any attachments of hydrogen (H), chlorine (Cl), bromine (Br), or iodine (I). Unlike previous restriction proposals under the Regulation on the registration, evaluation, authorisation and restriction of chemicals (REACH), this ban covers an extensive array of PFAS, estimated to be between 5000 and 10000 compounds. These substances are known for their resistance to heat, water, and grease, making them valuable in various industrial applications. This is why the nuclear industry needs to understand where PFAS are used in the sector and map essential uses, as this persistence can be key for some applications.

Restriction Options and Consultation Period
Two restriction options were proposed to ECHA for consideration by the authorities who submitted the dossier. The first option, RO1, suggests a complete ban on PFAS with no derogations, proposing a transition period of 18 months. The second option, RO2, also advocates for a full ban but allows for either a 5 or 12-year derogation, along with an 18-month transition period. Furthermore, a limited number of derogations without time

constraints are included. ECHA has opened a 6-month consultation period, ending on 25 September 2023, during which stakeholders can provide information and feedback on the proposal.

Importance of Providing Substantiated Information

Downstream users, including the nuclear industry, bear the responsibility of providing information about the significance of specific PFAS uses. As the ban has the potential to impact a wide range of nuclear applications, it is crucial for the industry to thoroughly assess and identify the uses of PFAS within its operations. Nucleareurope is collaborating with its members to submit a comprehensive response to the ECHA consultation substantiated by scientific data. By presenting well-supported arguments, the industry can effectively convey the importance of specific uses of PFAS and advocate for the necessary derogations or alternative solutions.

Collaborative Efforts and Involvement of the Supply Chain

To address this complex issue, nucleareurope plans to engage with all companies across the supply chain. By involving stakeholders, including suppliers, in the consultation process, nucleareurope aims to facilitate the collection of relevant data and insights. nucleareurope is also working with the European Chemical Industry Council (CEFIC) to comprehensively address the concerns associated with the PFAS ban.

The proposed ban on PFAS poses a significant threat to the nuclear industry, with potential ramifications for its operations and processes. The consultation on the proposed ban on PFAS compounds presents a crucial opportunity for the nuclear industry to advocate for the necessary derogations and emphasise the concept of essential uses. By actively engaging in the consultation process and providing substantiated information backed by scientific data, we aim to secure derogations where needed. We need to ensure that the ban does not unintentionally hinder essential applications within the nuclear industry that currently lack viable alternatives or require additional time for transition. We hope to shape an outcome that recognises the essential uses of PFAS within the nuclear sector. “

Nuclear industry underestimates risks for local resident: nuclear power plants and uranium mines with too flexible norms

Critical comments are constantly being made about the risks of nuclear power plants, the unsolvable problem of nuclear waste, the uninsurability of the sector and the real costs. The fact that normal life around nuclear power plants (and around uranium mines) also entails serious health risks is receiving less attention. Dutch author Els de Groen wrote this analysis of an unjustly underestimated danger.

This article was alco published on the 22nd of May on https://www.dewereldmorgen.be/artikel/2023/05/22/kernenergiesector-onderschat-risicos-voor-omwonenden-kerncentrales-en-uraniummijnen-met-te-soepele-normen/

The Dutch government wants to build two new nuclear power plants in the province of Zeeland. More nuclear energy would help reducing CO2 emissions and combat global warming. The Chernobyl and Fukushima disasters seem to be forgotten. Many people from Zeeland are concerned about the damage to the landscape, but there is also concern about new reports that show that living near a nuclear power plant is not without risks.

It has been known for almost 70 years that not all people are equally sensitive to radiation. For example, Americans already knew in 1960 that children in particular are more sensitive to radiation and it was obvious that the American Federal Radiation Council (FRC) would adjust all radiation standards to a Standard Child.

But soon the FRC backtracked and maintained the much more lenient standards for a less strict Standard Man, later called Reference Man. The International Commission for Radiation Protection (ICRP), which determines how much radiation people may be exposed to, also uses the Reference Man standard.

This is why women, children and fetuses may receive two to fifteen times as much radiation as is medically justified. Tumors and other conditions do not immediately reveal themselves. That is why it is the latest studies that make the consequences of exposure to excessive doses of radiation painfully clear.

Why is uranium radiation dangerous?
Nuclear energy is created by fissioning uranium, a radioactive and toxic metal. Uranium atoms emit four nuclear particles at once. That "bombardment" of particles is called alpha radiation. There is also radiation without particles, such as X-rays or gamma rays.

All particle radiation and especially alpha radiation is extremely harmful. Outside your body, you can stop it with paper. But if you breathe or swallow it, the particle radiation will continue in your lungs, for example, and it can cause a tumor there. It can also change your DNA, so that the damage only reveals itself in subsequent generations.

No Reference Childals ultimate safety standard

In children – especially babies and fetuses – the higher sensitivity has to do with their growth. Body growth is cell division. If radiation disrupts this division, the risk of cancer is four to fifteen times greater than in adults.

That women are twice as sensitive to radiation as men can be explained by her reproductive tissue and the sensitive mammary gland. In recent studies, young girls also appear to be more sensitive than boys, although the exact cause still needs to be investigated.

But no matter how different people are, they share the same space, breathe the same air and drink the same water. That automatically makes the most sensitive person the logical safety standard. With a comparison: a swimming pool is only safe for the population as a whole if it has the depth of a paddling pool.

By not taking the most vulnerable as a starting point, but the Standard or Reference Man, two thirds of the world's population have been insufficiently protected for many decades, because the ICRP standards for radioactive radiation apply in all countries.

That scientists were aware of this insufficient protection of women and children is apparent from the exemption for pregnant radiation workers. They may only receive one twentieth of the dose to which colleagues may be exposed. Pregnant radiation workers are monitored individually, pregnant citizens are not.

The Standard Man dissected

Not all our organs are equally sensitive to radiation. That is why the ICRP uses a system of weighting factors: for example, 0.04 for the thyroid gland and 0.12 for the lungs. All sensitivities together are 1 and represent 1 Standard Male.

Example of how weighting factors are used:

- the allowable radiation dose to the whole body is 1 millisievert[1] (body dose limit). The thyroid gland has a weighting factor of 0.04. The allowable dose on the thyroid is: 1 millisievert divided by 0.04 = 25 millisievert (organ dose limits are always much higher than the body dose limit);
- corrections to this system are impossible, because if an organ turns out to be more sensitive and deserves a higher factor, another organ must be made less sensitive in order not to exceed '1 = 1 man'.

Nevertheless, the ICRP regularly changes the weighting factors. For example, gonads went from 0.25 to 0.20 over 30 years and then back to 0.08. If you would take into account the sensitivity of women, you would end up with not 1 but 2 people. With children and fetuses you would end up with 4 and 15 people respectively.

Nuclear Lobby

In the last century little attention was paid to the specific sensitivity of children and women. The World Health Organization (WHO) never seriously investigated it. If the WHO were to do so, it would first have to submit such a plan to the International Atomic Energy Agency (IAEA), which could theoretically thwart the investigation.

On May 28, 1959, WHO and IAEA signed the convention WHA 12-40. It states: “Whenever either organization plans a program or activity on a subject in which the other organization has or may have a major interest, the first

organization should consult the other with a view to settling the matter so that both organizations would agree.

This treaty text reads as if both organizations have equal status, but in practice the voice of the WHO, which promotes global health, appears to be secondary to the voice of the IAEA, which promotes nuclear energy. Sometimes this is accompanied by the dismissal of critical scientists, such as the Briton Keith Baverstock. See also: Critical Comments.docx on WHO & IAEA, by Dr. Katsumi Furitsu (2009).

Hundreds of billions are involved in the nuclear sector. Tightening of standards puts the income and work of many people at risk. When it was discovered in the 1970s that radioactivity turned out to be a factor of ten to thirty more dangerous than previously assumed, the radiation standards were relaxed by the ICRP.

Compare reports ICRP-9 and ICRP-26, in which the radiation doses to lungs and red bone marrow are multiplied. Late dr. Leendert Ginjaar, Minister of Health, strongly resisted at the time, so that the more flexible standards in the Netherlands were only introduced after years of delay. There was also criticism in the US. Karl Z. Morgan, former ICRP member, wrote in his memoirs about the infiltration of the ICRP by the nuclear lobby.

Although the body dose for civilians has now been tightened, the dose limits for individual organs remain high and standards are still aligned with the Reference Man. But time is like a photograph that is now slowly revealing the damage to our health.

More and more studies are appearing all over the world about the rise in cancers. British researcher Dr. Ian Fairlie concludes that people living near a nuclear power plant and especially young women and children run additional risks, even at low doses that are still considered safe. In his report Radiation risks and cancer in children from 2021, he also refers to studies by colleagues in many other countries

See also: David J. Brenner (2020) and Childhood leukemia near nuclear sites in Belgium (2021). The increase in leukemia in particular is a global pattern.

Uranium mines

Even more perilous than the plight of those living near a power station is that of those living near uranium mines, according to the BMJ, the British Medical Journal. Uranium is usually widely distributed in the earth's soil so that it does not pose a threat to local residents until it is mined.

To supply one nuclear power station with fissile material for a year, 440.000 tons of ore must be mined. The ore waste is dumped at the mine. These mines are often located in remote regions, where the original inhabitants depend on contaminated soil for their food and water.

There are six mines near the Indian city of Jadugoada and there is a sharp increase in babies with congenital abnormalities. These are children of mothers who were exposed to mining waste during pregnancy. In Arlit in Niger, where France mines uranium, the radiation level is higher than around Chernobyl.

It should be noted that for local residents this is a lifelong and permanent exposure in which radiation and toxicity mutually reinforce each other. Aborigines are dying in Australia, Navajos are dying in the US. What is striking in the passages in the BMJ about uranium mines is that mainly infants and children become victims.

Probably under pressure from the growing burden of proof in scientific studies, a change is visible. In 2022, the ICRP recognized that key parameters need to be reviewed and risk models improved. It seems covert language for the reference man's farewell.

The Belgian Superior Health Council is more firm in its advice and urges more protection for children and pregnant women. Hopefully it won't be just words and health will eventually win out over money.

[1] 1 sievert (Sv) – after Swedish medical physicist Rolf Sievert – is the unit of measurement for the total amount of radiation absorbed by body tissues. 1 millisievert (1 thousandth Sv) is the average dose of radiation that one person receives per year from their natural environment. For more details, see https://en.wikipedia.org/wiki/Sievert (ed.).

Els de Groen (1949) is a writer, poet and painter. She started as an author of children's books. Her first book on nuclear energy Radiation, can it be a little less? appeared shortly after the Chernobyl nuclear disaster (1986). She wrote several novels, which are mainly based on her many travels through Eastern Europe and have been translated into a number of Slavic languages. She wrote A swamp full of crocodiles about her one-time mandate as a member of the European Parliament (2004-2009). She also published volumes of poetry. Her personal website is www.elsdegroen.nl.

Bulgaria – plans for 4 new nuclear reactors in a time of long political crisis

Za Zemiata, the Bulgarian member of Friends of the Earth wrote an article on the Bulgarian nuclear policy in times of political crisis.

This article was originally published on the 8th of May on https://www.zazemiata.org/bulgaria-plans-for-4-new-nuclear-reactors-in-a-time-of-long-political-crisis/

Bulgaria faced five parliament elections in two years, but politics regarding nuclear energy did not change.

Politicians and Parliament past decisions preparing the construction of four new nuclear reactors, two in Kozloduy and two in Belene. They choose Western reactors without giving up the already delivered parts for Russian reactors in Belene.

On 12 May 2023, the Constitutional Court rejected a request of deputies from the pro-Russian, pro-nuclear parties of the Socialists (BSP) and "Vazrazhdane" to declare a decision of the 48th Parliament unconstitutional. This decision on 12 January 2023 allowed the government to conduct negotiations with the US government regarding the conclusion of a construction agreement for new nuclear reactors at the Kozloduy NPP with AP 1000 technology. The parties that went to court are in favour of using Russian reactors, and therefore they wanted the Constitutional Court to stop the parliament's decision on the AP 1000.

On 18 May 2023, the French energy company EdF presented, through Bulgarian Energy Minister Rosen Hristov, a detailed plan of how a pre-project study would be carried out on the possibilities of completing the frozen project for the construction of the Belene NPP.

An engineering contract is to be developed and signed for the construction of two units of 1,000 megawatts each, using the existing Russian VVER-1000 equipment at the Belene site, but using French conventional technology. The caretaker government's intention to sign later an engineering contract with France's EdF to study whether Belene NPP could be completed using Western technology already was announced at the end of March. Previously, the Minister of Energy informed that a feasibility study was planned by the US company Westinghouse for two new reactors at the site of the Kozloduy NPP.

According to the analysis proposal submitted by EdF, this will take between nine months and one year, the energy department explained.

It is likely that the assessment from EdF will be paid for by the National Electric Company, owner of the assets for the Belene NPP, and that the Westinghouse study will be financed by the Kozloduy NPP New Powers company, which was specially created for new reactors in Kozloduy.

It should be kept in mind that these contracts refer only to pre-project engineering studies and not to construction.

Todor Todorov

Za Zemiata