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Monitored this issue:

Clarity, secrecy and fake news around ruthenium-106 measurements

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NM859.4712

The picture about why at the end of September, early October 2017 many radiation monitoring stations in Europe measured the man-made isotope ruthenium-106 (Ru-106) in the atmosphere is more or less clear. It looks like a botched attempt to produce cerium-144 from fresh spent nuclear fuel at the Mayak complex in the Southern Urals in Russia resulted in emissions of ruthenium-oxide crystals into the atmosphere.

We know that Rosatom's Mayak complex was the only bidder in a tender for this material for an Italian-French research project under EU funding, we know it cancelled that tender late last year for unknown reasons, we know that some of the better-equipped measurement stations also measured the shorter-lived ruthenium-103, and we know that weather patterns point to the Southern Urals as most likely point of origin.[1]

The only thing missing is a confirmation from Rosatom itself. That we know so much is thanks to the Nuclear Safety Institute of the Russian Academy of Science, the French nuclear technical support organisation IRSN, the German Bundesanstalt für Strahlenschutz (BfS) and the Swedish, Finish and Norwegian nuclear safety regulators. That we know so little is due to a wave of misinformation and a refusal to publish the international measurements gathered by the IAEA.

What happened

On 13 October 2017, the IAEA confidentially shared with its member states a list of strange measurements of Ru-106 all over the European continent. Two institutes, the French IRSN and the German BfS, came to the conclusion that the source must have been a large emission of 100 to 300 TBq (1 to 4 grams) of the isotope from a source in the Southern Urals or Kazakhstan. No institute or nuclear operator informed the IAEA of an incident or accident.

What is also surprising is that only ruthenium was measured, no other substances. This excludes issues like power reactor accidents or the re-entrance of a radiation-battery-powered satellite into the atmosphere. The sheer amount excludes a release of a medical source. By the end of the year, it became clear that the more sophisticated measurement stations had also detected Ru-103, a shorter-lived isotope of ruthenium. The Ru-106/Ru-103 ratio was around 4000 to 1. This means that the only source can be relatively fresh spent nuclear fuel that is not longer than two years out of the reactor.

In the meantime, a Russian human rights lawyer in exile in France, Nadezhda Kutepova, found out with the help of French experts and journalists that the Gran Sasso National Laboratory in L'Aquila, Italy, in an EU Research Council funded set-up with French CEA, had tendered for the delivery of a Ce-144 source – a tender won by the only bidder, Rosatom's Mayak. IRSN came to the conclusion that the production of this source could explain the use of fresh spent fuel. In December 2017, Mayak canceled its contract – it was not able to successfully produce the source.[2]

The Nuclear Safety Institute of the Russian Academy of Science organised on 31 January 2018 a meeting with an international commission consisting of experts from IRSN, BfS and the Finnish, Norwegian and Swedish nuclear regulators STUK, Strålevern and SSM. This commission came after four months of confusion to a surprisingly clear consensus about all factors playing a role and agreed that the hypothesis that the ruthenium may have escaped during a failure in the production of cerium-144 at the Mayak facility is a reasonable one. The only open factor, however, remains conclusion 9: "The Commission noted that the Rostechnadzor inspections were conducted at the PO "Mayak" and NIIAR (Dimitrovgrad) facilities covering the operations during the period August – November 2017, and no deviations from normal technological processes were found." A new meeting is scheduled for 11 April 2018 in Moscow.[3]

Misinformation, diversion and surprising facts

From the moment that IRSN and BfS arrived at their independent conclusions that the source is probably to be found in the Southern Urals, Rosatom and Mayak denied any involvement and different Russian commentators started pointing fingers into other directions. Maksim Shingarkin, a former member of the Duma's environment committee, claims the ruthenium came from a spy satellite returning into the atmosphere. In December, suddenly a tender was awarded by Mayak to clean up the area around factory #235, a newly renovated facility for reprocessing, allegedly to clean up fall-out from the 1957 Kyshtym catastrophe.

Around the same time, I received questions for comment from two young independent Russian and Ukrainian journalists, suggesting that the ruthenium might have come from Romania, where the highest concentrations were measured, or from Ukraine. The Ukraine story persists despite contrary evidence. On 26 September 2017, an ammunition depot at Kalynivka near Vinnytisia exploded and up to today, blogpost after tweet after blogpost tries to locate the source of ruthenium-106 there.

Rosatom so far continues with denial and diversion, among others by stating it did not produce Ru-106 from spent fuel for years already[4] and continuing to stress that the concentrations measured posed no risk to health. It even went as far as starting a Twitter and Facebook campaign with a cartoon character in the form of a clump of ruthenium asking "what have I done to you?"[5] Its close news outlet *geoenergetics.ru* leaked on 19 October 2017 a copy of the confidential list from the IAEA with measurement data of ruthenium-106, and tried to ridicule the findings from BfS.[6]

Public prosecutor investigations

Greenpeace Russia turned in November to the public prosecutor for an independent investigation. After a long silence, the prosecutor's office said in January that it saw no priority for this case because Russia's authorised bodies (e.g. Rostechnadzor) did not register any incidents and that the concentrations measured "are so low that they do not pose a health risk". The open question is whether this will change on the basis of the findings of the international commission and the Nuclear Safety Institute of the Russian Academy of Science.

Access to information and the IAEA

The publication of the list from the IAEA of the Ru-106 measurement data on *geoenergetics.ru* came as a bit of surprise. The website is very close to Rosatom, and it is unlikely the leak happened without its approval. In order to verify if the two documents published were indeed genuine and not tampered with, WISE and Nuclear Transparency Watch turned to the IAEA. The IAEA refuses to confirm or deny authenticity because the document is confidential. It only describes how it got the data from the member states and that the concentrations are no threat to human health.

Then, WISE turned to the Dutch nuclear regulator ANVS with a request for verification and a copy. It appears that the IAEA made two updates in the meantime, and now also includes data from Roshydromet, the Russian meteorological authority, and from Kazakhstan. However, ANVS also refused verification or access because this could cause international tensions. WISE appealed the verdict, arguing that with the exception of information from Turkey and Russia, all delivered data came from parties to the Aarhus Convention and for that reason should be public – and the Russian data obviously were leaked by Russian authorities themselves already. WISE is still waiting on the outcome of the appeal.

Conclusion

It first has to be stated clearly that the measured concentrations of ruthenium are so low that they do not pose a health risk. IRSN, however, remarks that the concentrations near the source were probably high enough to warrant protective measures for several kilometres around. Greenpeace, WISE and others received concerned questions from people around Mayak, and therefore full transparency should be the default.

It is clear that – like in the case of denial around the Kyshtym catastrophe in 1957, Chernobyl and also later cases of contamination in Mayak – Rosatom still cannot be trusted in cases of incidents. What is new, is that this is exacerbated by the appearance of fake-news over social media in a clear attempt to divert attention away from the problem. The IAEA system of information further obscures the process of getting clarity because it lacks a proper transparency policy, for instance one based on the principles of the Aarhus Convention. That the situation has not become worse is because more courageous organisations, or maybe one should say, more transparent organisations like IRNS and BfS try to give as much clarity as the law offers them. But also they have to stop at certain limits, as the conclusions from the Moscow meeting of the international commission shows.

This is, first of all, a problem because there may have been some workers and surrounding inhabitants contaminated that may need now or in the future some kind of support. But as problematic is the fact that if this system repeats itself in the case of a more serious accident, we will not have time to wade through a swamp of hoaxes, diversion and false denials. In case of nuclear accidents, transparency should be number one. Fast and clear access to data is vital. It is the policies of IRSN, BfS and the Nuclear Safety Institute of the Russian Academy of Science that should form the basis, but the limitations they are facing should be removed. Only in that way can we prevent the worst when facing serious nuclear incidents.

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Fukushima Fallout – Updates from Japan

NM859.4713

Seven years after the Fukushima disaster, an estimated 50,000 of the 160,000 evacuees remain dislocated. Six reactors are operating (compared to the pre-Fukushima fleet of 54), and 14 reactors have been permanently shut-down since the Fukushima disaster (including the six Fukushima Daiichi reactors). Decontamination of Fukushima Prefecture is slow and partial. Decommissioning the Fukushima Daiichi reactor plant will take decades. Official estimates of the clean-up and compensation costs stand at US$202 billion and will rise further.

50,000 Fukushima residents still displaced

Some 73,000 people – two-thirds (50,000) of them former Fukushima Prefecture residents – remain displaced on the seventh anniversary of the Great East Japan Earthquake, tsunami and nuclear disaster, according to the Reconstruction Agency. About 53,000 people are living in prefabricated temporary housing, municipality-funded private residences, or welfare facilities. Nearly 20,000 are staying with relatives or friends.

Although roads, railways and homes have been rebuilt in the stricken Tohoku region, the outflow of population continues from devastated areas, particularly from coastal communities. Iwate, Miyagi and Fukushima prefectures – the three hardest-hit prefectures – saw a combined decline in population of 250,000, compared with pre-disaster levels.

In Fukushima Prefecture, the evacuation order for four municipalities that were exposed to high levels of radiation from the Fukushima No. 1 nuclear power plant accident was lifted about a year ago. But not many residents are returning to live in their hometowns.

Asahi Shimbun, 11 March 2018, 'Over 70,000 still living elsewhere from 2011 quake and tsunami', www.asahi.com/ajw/articles/AJ201803110022.html

NHK, 7 March 2018, 'Evacuees from 2011 disaster number over 73,000', https://www3.nhk.or.jp/nhkworld/en/news/20180307_34/

Japanese government agrees to recommendations on the rights of evacuees

The Japanese government announced in early March that it had accepted all recommendations made at the United Nations Human Rights Council (UNHRC) on the rights of evacuees from the Fukushima Daiichi nuclear accident. The decision is a victory for the human rights of tens of thousands of evacuees, and civil society that have been working at the UNHRC and demanding that Japan accept and comply with UN principles. The decision means that the Japanese government must immediately change its unacceptable policies, said Greenpeace.

"I cautiously welcome the Japanese government's acceptance of the UN recommendations. The government may believe that an insincere acceptance is sufficient. They are wrong to think so – and we are determined to hold them to account to implement the necessary changes that the UN members states are demanding," said Yuichi Kaido, a lawyer for multiple Fukushima accident lawsuits against TEPCO and the Japanese government.

Greenpeace radiation survey results published recently showed high levels of radiation in Iitate and Namie that make it unsafe for citizens to return before mid-century, and even more severe contamination in the exclusion zone of Namie. High radiation levels in Obori would mean you would reach exposure of 1 millisievert (mSv) in just 16 days.

The lifting of evacuation orders in areas heavily contaminated by the nuclear accident, which far exceed the international standard of 1 mSv/year for the general public, raise multiple human rights issues. Housing support is due to end in March 2019 for survivors from these areas. The Japanese government also ended housing support for so-called 'self evacuees' from other than evacuation order zone in March 2017, and removed as many as 29,000 of these evacuees from official records. This amounts to economic coercion where survivors may be forced to return to the contaminated areas against their wishes due to economic pressure. This clearly contravenes multiple human rights treaties to which Japan is party.

Greenpeace Japan, 8 March 2018, 'Japanese government accepts United Nations Fukushima recommendations - current policies now must change to stop violation of evacuee human rights', www.greenpeace.org/japan/ja/news/press/2018/pr20180308/

Water worries

A costly "ice wall" is failing to keep groundwater from seeping into the stricken Fukushima Dai-ichi nuclear plant, data from operator Tokyo Electric Power Co shows. When the ice wall was announced in 2013, TEPCO assured skeptics that it would limit the flow of groundwater into the plant's basements, where it mixes with highly radioactive debris from the site's reactors, to "nearly nothing."

However, since the ice wall became fully operational at the end of August 2017, an average of 141 metric tonnes a day of water has seeped into the reactor and turbine areas, more than the average of 132 metric tonnes a day during the prior nine months, a Reuters analysis of the TEPCO data showed.

A government-commissioned panel offered a mixed assessment of the ice wall, saying it was partially effective but more steps were needed.

The groundwater seepage has delayed TEPCO's clean-up at the site and may undermine the entire decommissioning process for the plant.

Contaminated waste piling up in the town of Tomioka, Fukushima Prefecture.

Though called an ice wall, TEPCO has attempted to create something more like a frozen soil barrier. Using 34.5 billion yen (US$324 million) in public funds, TEPCO sunk about 1,500 tubes filled with brine to a depth of 30 meters (100 feet) in a 1.5-kilometre (1-mile) perimeter around four of the plant's reactors. It then cools the brine to minus 30 degrees Celsius (minus 22 Fahrenheit). The aim is to freeze the soil into a solid mass that blocks groundwater flowing from the hills west of the plant to the coast.

Other water control measures have been more successful. TEPCO says a combination of drains, pumps and the ice wall has cut water flows by three-quarters, from 490 tons a day during the December 2015 to February 2016 period to an average of 110 tons a day for December 2017 to February 2018.

The continuing seepage has created vast amounts of toxic water that TEPCO must pump out, decontaminate and store in tanks at Fukushima that now number 1,000, holding 1 million tonnes. TEPCO says it will run out of space by early 2021 and must decide how to cope with the growing volume of water stored on site. The purification process removes 62 radioactive elements from the contaminated water but it leaves tritium, a mildly radioactive element that is difficult to separate from water. A government-commissioned taskforce is examining five options for disposing of the tritium-laced water, including ocean releases, though no decision has been made.

Abridged from: Aaron Sheldrick and Malcolm Foster, 8 March 2018, 'Tepco's 'ice wall' fails to freeze Fukushima's toxic water buildup', www.reuters.com/article/us-japan-disaster-nuclear-icewall/tepcos-ice-wall-fails-to-freeze-fukushimas-toxic-water-buildup-idUSKCN1GK0SY

Legal fallout

Legal fallout from the March 2011 accident at Fukushima Daiichi Nuclear Power Station continues, as dozens of lawsuits and injunctions make their way through Japan's judicial system. The final rulings could have a profound impact on the government's energy policy and approach to risk mitigation.

Court cases stemming from the meltdown at Fukushima Daiichi can be divided broadly into two categories. In the first are efforts to assign responsibility for the accident, including one high-profile criminal case and numerous civil suits by victims seeking damages from the government and owner-operator Tokyo Electric Power Company. The second group consists of lawsuits and injunctions aimed at blocking or shutting down operations at plants other than Fukushima Daiichi (whose reactors have been decommissioned) on the grounds that they pose a grave safety threat.

Shizume Saiji / Nippon, 12 March 2018, 'Nuclear Power Facing a Tsunami of Litigation', www.nippon.com/en/currents/d00388/

Firm admits nuclear waste data falsification

Sixteen pieces of data relating to the underground disposal of highly radioactive waste, which scandal-hit Kobe Steel Ltd. and a subsidiary analyzed at the request of the Japan Atomic Energy Agency (JAEA), were falsified, forged or flawed in other ways, the nuclear research organization said.[1,2]

The tests are designed to examine what happens to metal cladding tubes that had previously contained spent nuclear fuel when they are disposed of deep underground, including possible corrosion and by-products of gas, according to the Nuclear Regulation Authority (NRA). A report the NRA received from the JAEA said that figures in the original data and those in reports submitted by Kobe subsidiary Kobelco did not match. Furthermore, some original data could not be located.

The NRA outsourced the testing to the JAEA in fiscal 2012 through fiscal 2014 at a cost of about 600 million yen (US$5.59 million). Kobelco was subcontracted to undertake some of the tests for about 50 million yen.

Kobe Steel admitted in October 2017 to rewriting inspection certificates for some of its products and other misconduct.[3] Deliveries to nuclear power facilities were affected by these scandals. One case involved replacement pipes that were scheduled to be used in a heat exchanger of a residual heat removal system at Fukushima Daini Unit 3. Another involved centrifuge parts that had not yet been used at the Rokkasho uranium enrichment plant.

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Stop public funds for Japanese nuclear plant in Wales

Horizon Nuclear Power, a wholly owned subsidiary of Japanese electronics giant Hitachi Ltd., is attempting to construct a 2.7 gigawatt nuclear power plant in Wylfa, on the scenic and historic island, Anglesey, Wales, in the UK. The project cannot proceed without public financial support, and the Japanese government is orchestrating an "all-Japan" support system to secure its financing, backed up by public money.

Friends of the Earth Japan is working with local groups in Wales to stop the nuclear project and calls on individuals and organizations around the world to sign the petition posted at www.foejapan.org/en/energy/doc/180307.html

Fusion scientist debunks ITER test reactor

NM859.4714

The Guardian's science correspondent reported on 9 March 2018 that the dream of nuclear fusion is on the brink of being realized according to a major new US initiative that says it will put fusion power on the grid within 15 years.[1] Prof Maria Zuber, MIT's vice-president for research, said that the development could represent a major advance in tackling climate change. "At the heart of today's news is a big idea – a credible, viable plan to achieve net positive energy for fusion," she said. "If we succeed, the world's energy systems will be transformed. We're extremely excited about this."

Sadly, is can be said with great confidence that the MIT is talking nonsense. Fusion faces huge – possibly insurmountable – obstacles that won't be solved with an over-excited MIT media release.

In Nuclear Monitor #842[2] we summarized an important critique[3] of fusion power concepts by retired fusion scientist Dr Daniel Jassby. He has written another article in the *Bulletin of the Atomic Scientists*, this one concentrating on the International Thermonuclear Experimental Reactor (ITER) under construction in Cadarache, France.[4]

Jassby notes that plasma physicists regard ITER as the first magnetic confinement device that can possibly demonstrate a "burning plasma," where heating by alpha particles generated in fusion reactions is the dominant means of maintaining the plasma temperature. However he sees four "possibly irremediable drawbacks": electricity consumption, tritium fuel losses, neutron activation, and cooling water demand.

Electricity consumption: The "massive energy investment" to half-build ITER "has been largely provided by fossil fuels, leaving an unfathomably large 'carbon footprint' for site preparation and construction of all the supporting facilities, as well as the reactor itself." ITER is a test reactor and will never generate electricity so that energy investment will never be repaid.

And when ITER is operating (assuming it reaches that stage), a large power input would be required. For a comparable power-producing reactor, a large power output would be necessary just to break even. Power inputs are required for a host of essential auxiliary systems which must be maintained even when the fusion plasma is dormant. In the case of ITER, that non-interruptible power drain varies between 75 and 110 MW(e). A second category of power drain revolves directly around the plasma itself – for ITER, at least 300 MW(e) will be required for tens of seconds to heat the reacting plasma while during the 400-second operating phase, about 200 MW(e) will be needed to maintain the fusion burn and control the plasma's stability.

Jassby notes that ITER personnel have corrected misleading claims such as the assertion that "ITER will produce 500 megawatts of output power with an input power of 50 megawatts." The 500 megawatts of output refers to fusion power (embodied in neutrons and alphas), which has nothing to do with electric power. The input of 50 MW is the heating power injected into the plasma to help sustain its temperature and current, and is only a small fraction of the overall electric input power to the reactor (300–400 MW(e)).

Tritium: "The most reactive fusion fuel is a 50-50 mixture of the hydrogen isotopes deuterium and tritium; this fuel (often written as "D-T") has a fusion neutron output 100 times that of deuterium alone and a spectacular increase in radiation consequences. ... While fusioneers blithely talk about fusing deuterium and tritium, they are in fact intensely afraid of using tritium for two reasons: First, it is somewhat radioactive, so there are safety concerns connected with its potential release to the environment. Second, there is unavoidable production of radioactive materials as D-T fusion neutrons bombard the reactor vessel, requiring enhanced shielding that greatly impedes access for maintenance and introducing radioactive waste disposal issues."

Tritium supply is likely to be problematic and expensive: "As ITER will demonstrate, the aggregate of unrecovered tritium may rival the amount burned and can be replaced only by the costly purchase of tritium produced in fission reactors."

Tritium could be produced in the reactor by absorbing the fusion neutrons in lithium completely surrounding the reacting plasma, but "even that fantasy totally ignores the tritium that's permanently lost in its globetrotting through reactor subsystems. "

Radioactive waste. "[W]hat fusion proponents are loathe to tell you is that this fusion power is not some benign solar-like radiation but consists primarily (80 percent) of streams of energetic neutrons whose only apparent function in ITER is to produce huge volumes of radioactive waste as they bombard the walls of the reactor vessel and its associated components. ... A long-recognized drawback of fusion energy is neutron radiation damage to exposed materials, causing swelling, embrittlement and fatigue. As it happens, the total operating time at high neutron production rates

International Thermonuclear Experimental Reactor.

in ITER will be too small to cause even minor damage to structural integrity, but neutron interactions will still create dangerous radioactivity in all exposed reactor components, eventually producing a staggering 30,000 tons of radioactive waste."

Water consumption: "ITER will demonstrate that fusion reactors would be much greater consumers of water than any other type of power generator, because of the huge parasitic power drains that turn into additional heat that needs to be dissipated on site. ... In view of the decreasing availability of freshwater and even cold ocean water worldwide, the difficulty of supplying coolant water would by itself make the future wide deployment of fusion reactors impractical."

The pumps used to circulate cooling water will require a power supply of as much as 56 MW(e).

Conclusions: Jassby concludes with some critical comments on conventional, fusion and fast breeder reactors:

"Critics charge that international collaboration has greatly amplified the cost and timescale but the $20-to-30 billion cost of ITER is not out of line with the costs of other large nuclear enterprises, such as the power plants that have been approved in recent years for construction in the United States (Summer and Vogtle) and Western Europe (Hinkley and Flamanville), and the US MOX nuclear fuel project in Savannah River. All these projects have experienced a tripling of costs and construction timescales that ballooned from years to decades. The underlying problem is that all nuclear energy facilities – whether fission or fusion – are extraordinarily complex and exorbitantly expensive. ...

"ITER will be, manifestly, a havoc-wreaking neutron source fueled by tritium produced in fission reactors, powered by hundreds of megawatts of electricity from the regional electric grid, and demanding unprecedented cooling water resources. Neutron damage will be intensified while the other characteristics will endure in any subsequent fusion reactor that attempts to generate enough electricity to exceed all the energy sinks identified herein.

"When confronted by this reality, even the most starry-eyed energy planners may abandon fusion. Rather than heralding the dawn of a new energy era, it's likely instead that ITER will perform a role analogous to that of the fission fast breeder reactor, whose blatant drawbacks mortally wounded another professed source of "limitless energy" and enabled the continued dominance of light-water reactors in the nuclear arena."

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Before the US approves new uranium mining, consider its toxic legacy

Author: Stephanie Malin – Assistant Professor of Sociology, Colorado State University

NM859.4715

Uranium – the raw material for nuclear power and nuclear weapons – is having a moment in the spotlight. Companies such as Energy Fuels, Inc. have played well-publicized roles[1] in lobbying the Trump administration to reduce federal protection for public lands with uranium deposits.[2] The Defense Department's Nuclear Posture Review calls for new weapons production to expand the U.S. nuclear arsenal, which could spur new domestic uranium mining.[3] And the Interior Department is advocating more domestic uranium production, along with other materials identified as "critical minerals."[4]

What would expanded uranium mining in the U.S. mean at the local level? I have studied the legacies of past uranium mining and milling in Western states for over a decade. My book examines dilemmas faced by uranium communities caught between harmful legacies of previous mining booms and the potential promise of new economic development.

These people and places are invisible to most Americans, but they helped make the United States an economic and military superpower. In my view, we owe it to them to learn from past mistakes and make more informed and sustainable decisions about possibly renewing uranium production than our nation made in the past.

Mining regulations have failed to protect public health

Today most of the uranium that powers U.S. nuclear reactors is imported. But many communities still suffer impacts of uranium mining and milling that occurred for decades to fuel the U.S.-Soviet nuclear arms race.[5] These include environmental contamination[6], toxic spills[7], abandoned mines, under-addressed cancer and disease clusters[8] and illnesses[9] that citizens link to uranium exposure despite federal denials.

As World War II phased into the Cold War, U.S. officials rapidly increased uranium production from the 1940s to the 1960s. Regulations were minimal to nonexistent and largely unenforced, even though the U.S. Public Health Service[10] knew that exposure to uranium had caused potentially fatal health effects in Europe[11], and was monitoring uranium miners and millers for health problems.

Today the industry is subject to regulations that address worker health and safety, environmental protection, treatment of contaminated sites and other considerations.[12] But these regulations lack uniformity, and enforcement responsibilities are spread across multiple agencies.[13]

This creates significant regulatory gaps, which are worsened by a federalist approach to regulation. In the 1970s the newly created Nuclear Regulatory Commission initiated an Agreement States program, under which states take over regulating many aspects of uranium and nuclear production and waste storage.[14] To qualify, state programs must be "adequate to protect public health and safety and compatible with the NRC's regulatory program."[15]

Today 37 states have joined this program and two more are applying.[16] Many Agreement States struggle to enforce regulations because of underfunded budgets, lack of staff and anti-regulatory cultures.[4] These problems can lead to piecemeal enforcement and reliance on corporate self-regulation.

For example, budget cuts in Colorado have forced the state to rely frequently on energy companies to monitor their own compliance with regulations.[17] In Utah, the White Mesa Mill – our nation's only currently operating uranium mill – has a record of persistent problems related to permitting, water contamination and environmental health, as well as tribal sacred lands and artifacts.[18]

Neglected nuclear legacies

Uranium still affects the environment[19] and human health in the West, but its impacts remain woefully under-addressed. Some of the poorest, most isolated and ethnically marginalized communities in the nation are bearing the brunt of these legacies.

There are approximately 4,000 abandoned uranium mines in Western states.[20] At least 500 are located on land controlled by the Navajo Nation.[21] Diné (Navajo) people have suffered some of the worst consequences of U.S. uranium production, including cancer clusters and water contamination.[22]

A 2015 study found that about 85 percent of Diné homes are still contaminated with uranium, and that tribe members living near uranium mines have more uranium in their bones than 95 percent of the U.S. population.[23] Unsurprisingly, President Donald Trump's decision to reduce the Bears Ears National Monument[24] has reinvigorated discussion over ongoing impacts of uranium contamination across tribal and public land.[25]

Despite legislation such as the Radiation Exposure Compensation Act[26] of 1990, people who lived near uranium production or contamination sites often became forgotten casualties of the Cold War. For instance, Monticello, Utah, hosted a federally owned uranium mill from 1942 to 1960.[27] Portions of the town were even built from tailings left over from uranium milling, which we now know were radioactive.[28] This created two Superfund sites that were not fully remediated until the late 1990s.[29]

Monticello residents have dealt with cancer clusters, increased rates of birth defects and other health abnormalities for decades.[30] Although the community has sought federal recognition and compensation since 1993, its requests have been largely ignored.[31]

Today tensions over water access and its use for uranium mining are creating conflict between regional tribes and corporate water users around the North Rim of the Grand Canyon.[32] Native residents, such as the Havasupai, have had to defend their water rights[33] and fear losing access to this vital resource.

Uranium production is a boom-and-bust industry

Like any economic activity based on commodities, uranium production is volatile and unstable.[34] The industry has a history of boom-bust cycles. Communities that depend on it can be whipsawed by rapid growth followed by destabilizing population losses.[35]

The first U.S. uranium boom occurred during the early Cold War and ended in the 1960s due to oversupply, triggering a bust.[36] A second boom began later in the decade when the federal government authorized private commercial investment in nuclear power. But the Three Mile Island (1979) and Chernobyl (1985) disasters ended this second boom.

Uranium prices soared once again from 2007 to 2010. But the 2011 tsunami and meltdown at Japan's Fukushima Dai-ichi nuclear plant sent prices plummeting once again as nations looked for alternatives to nuclear power.

Companies like Energy Fuels maintain – especially in public meetings with uranium communities[37] – that new production will lead to sustained economic growth.[38] This message is powerful stuff. It boosts support, sometimes in the very communities that have suffered most from past practices.

But I have interviewed Westerners who worry that as production methods become more technologically advanced and mechanized, energy companies may increasingly rely on bringing in out-of-town workers with technical and engineering degrees rather than hiring locals – as has happened in the coal industry.[39] And the core tensions of boom-bust economic volatility and instability persist.

Uranium production advocates contend that new "environmentally friendly" mills[40] and current federal regulations will adequately protect public health and the environment.[41] Yet they offer little evidence to counter White Mesa Mill's poor record.

In my view, there is little evidence that new uranium production would be more reliably regulated or economically stable today than in the past. Instead, I expect that the industry will continue to privatize profits as the public absorbs and subsidizes its risks.

Stephanie Malin is the author of the 2015 book, 'The Price of Nuclear Power: Uranium Communities and Environmental Justice', published by Rutgers University Press, www.rutgersuniversitypress.org/the-price-of-nuclear-power/9780813569789

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Western Australia: Supreme Court appeal lodged against Yeelirrie approval decision

9 March 2018: The Conservation Council of Western Australia (CCWA) and members of the Tjiwarl Native Title group have announced the filing of an appeal against the Supreme Court's recent decision which upheld the environmental approval for Cameco›s Yeelirrie uranium mine proposal.

The Supreme Court challenge brought by CCWA and Aboriginal Native Title holders sought to overturn the environmental approval for the mine issued in the final days of the Barnett Government, against the advice of the WA Environmental Protection Authority (EPA) and the Minister's own appeal decision. If it goes ahead, the project will cause the extinction of multiple species unique to the Yeelirrie area.

Vicky Abdullah, Tjiwarl Native Title Holder, said, "We have fought long and hard to protect Yeelirrie and to stop the uranium project, so we will not stop now. This appeal shows that we will continue to fight for our country and our people, and hope that the Court of Appeal will see that the decision to approve the Yeelirrie uranium project was wrong."

CCWA Director Piers Verstegen said allowing the Supreme Court's interpretation of the law to go unchallenged would be bad for the environment and bad for democracy.

"The decision to appeal this judgement highlights our commitment to preventing extinction and upholding what we believe are fundamental principles of environmental law. If this decision is allowed to stand then the Environment Minister could sign off on the extinction of multiple species with the stroke of a pen, despite what the EPA and appeals processes say.

"According to the Supreme Court ruling, we can have a detailed, thorough, publicly funded environmental assessment process, with all the key information examined in the public domain, followed by a rigorous appeals process, and then the Minister can totally disregard that whole process and make a different decision based on different information that is not available to the public. This treats the EPA and its environmental assessment as something to be casually dismissed. Western Australians expect and deserve better government than that.

Tjiwarl Native Title group members Shirley Wonyabong, Elizabeth Wonyabong, and Vicky Abdullah.

"CCWA and community groups fought for WA›s environmental protection laws and the EPA. Now, it is again up to community to defend the integrity of those laws and processes in the courts. This is essential to uphold due process in environmental decisions, and to restore confidence in the EPA.

"The WA Environmental Protection Act was never intended to be used to sanction the extinction of wildlife, and it is our responsibility to do everything we can to ensure that it is not used in this way. The Yeelirrie approval knowingly allows extinction of multiple species and this should never be contemplated. We must stand up for all creatures, great and small. Allowing the extinction of any creature could open the door for other species to be treated in the same way. Numbats, cockatoos and other wildlife could be next, so we can›t allow it to start here."

Photos and video footage: https://tinyurl.com/yeelirrie

Looking back, looking forward: Nuclear Monitor #2 – July 1978

Author: Jim Green – Nuclear Monitor editor

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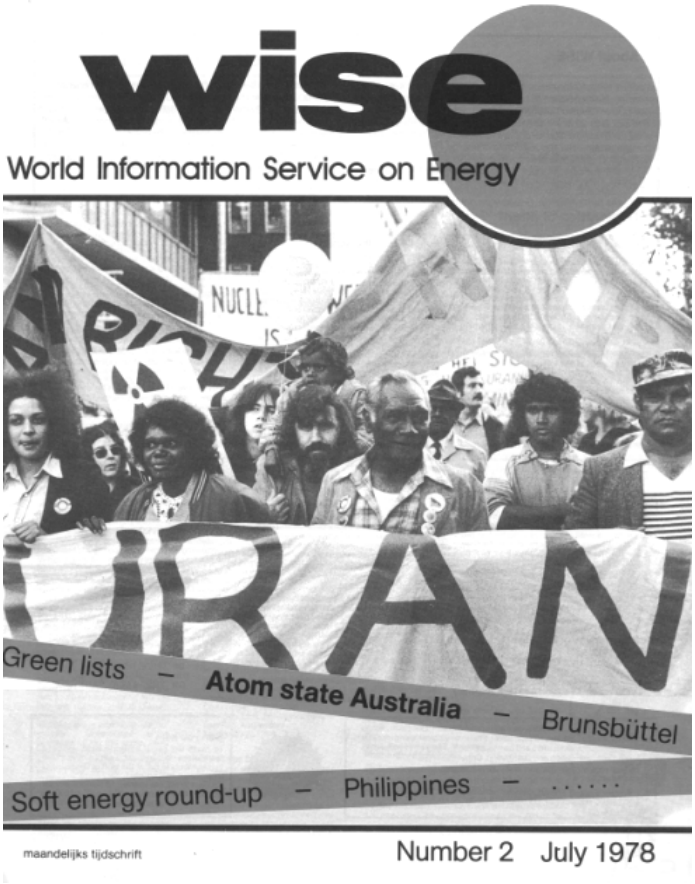


Nuclear Monitor #2, July 1978

We looked back at the first ever issue of Nuclear Monitor in issue #856.[1] The second issue, dated July 1978, covers lots of ground but the threat to civil and political liberties is a recurring theme. Issue #2 begins:

"Look at what is happening in Australia, usually counted as a 'democratic' country. The Australian government has forced through legislation forbidding free speech about nuclear issues, and imposing severe penalties for any protest action or boycott, including trade union action, against any aspects of the nuclear industry. Information to the general public about the industry is subject to official secrecy.

"Legislation that turns Australia into a police state, as far as opposition to the nuclear industry is concerned, was forced through in June by the Fraser government. A package of six bills … restrict civil liberties, impose secrecy regulations, and erode the land rights of the Aborigines, on whose land most uranium is located. … Uranium mining has now been brought under an amended Atomic Energy Act 1953, which is a piece of repressive defence legislation dating from the Cold War period. It means that trade unionists or environmentalists will be liable to 12 months in prison or fines of 10,000 Australian dollars for demonstrating or even speaking against the Ranger mining project. …

"The Northern Lands Council, which represents Aboriginal interests, is forbidden to diffuse information about the uranium mining industry affecting the Aboriginal people. One of the bills concerns the planned Kakadu national park, the boundaries of which have been established not to protect Aboriginal lands but to serve commercial and mining interests. The new legislation will enable mining to take place without the consent of the Aboriginal land-owners through the Northern Land Council."

"The reason is clear. Australia has 70% of the uranium resources available on the world market. Ordinary citizens and workers, aware of the threat to world peace from the proliferation of nuclear weapons, had begun to oppose the mining and export of Australia's uranium. But Australia's clients must be supplied: not just western European countries, but Iran, Brazil, South Africa, the Philippines. Democracy counts for little when uranium supplies are at stake. So do the rights of native peoples in Australia, Canada and the USA.

"The expansion of uranium mining in Australia, Canada and elsewhere has coincide with pressure to develop uranium enrichment capacity … URENCO, the Dutch-German-British company enriching at Capenhurst and Almelo, is a key link in the chain. In Holland, where there is a broad popular movement against expanding Almelo, and parliamentary pressure for watertight anti-weapon guarantees on enriched uranium for Brazil, the government has come under irresistible international pressure to export virtually without guarantees.

"Right through the cycle, the pattern is the same: the more vital a link is to the nuclear industry, the greater the disrespect for democratic rights. Thus fast breeder are seen as a way of avoiding dependence on uranium suppliers: hence the brutal repression at Malville, the display of police force at Kalkar.

"Reprocessing is needed to produce the plutonium for the fast breeders – and as a 'solution' to the waste problem, without which there will be growing pressure to block all reactor development. Hence the limitations on the right to strike at La Hague and Windscale, and the police-state pattern of repression around the Gorleben site.

"But the world-wide complexity of the nuclear monster is also its greatest weakness. It is vulnerable at every stage of the fuel cycle. And because the industry's only basic motivation is profits (though for governments, prestige or a justification for repression may count), anything that sends costs up is a major blow. An effective boycott of Australian uranium exports (in Australia or at ports everywhere) would send uranium prices rocketing. Delays to enrichment plans can play havoc with operating costs. Every successful move against a reactor project (by direct action of legal tactics) undermines profit margins on investment."

Weapons proliferation risks, and indigenous peoples

The risk of civilian nuclear programs was front and center of nuclear debates in 1978. Issue #2 of Nuclear Monitor notes that Australia and Japan were considering developing an enrichment plant in Australia, possibly with the help of URENCO. What wasn't publicly known in 1978 was that Australia's interest in weapons was clearly linked to weapons. In the mid-1960s, the Australian Atomic Energy Commission began secret enrichment R&D in the basement of one of its buildings. In any case, plans for enrichment in Australia floundered.

Issue #2 reports on limitations of the IAEA safeguards system: "Effective control over what happens in plants handling large quantities of nuclear material (enrichment or re-processing) is not possible without permanent on the spot inspectors. Controls are inadequate in Magnox and CANDU reactor types where the fuel is replenished. Control of stored fissionable material can be impossible when inspectors cannot enter the facilities. All this in a secret report from the IAEA (International Atomic Energy Agency), the world control and inspection agency, to its own board of governors. The report has been leaked in the Netherlands (where enriched uranium it to be delivered to Brazil on the basis of international controls!) by the National Energy Committee."

In the US, the Mobilization for Survival group was campaigning against both the civilian nuclear industry and nuclear weapons. Issue #2 reported: "Mobilization for Survival's dual campaign against nuclear weaponry and civil atomic power is gathering momentum in the United States. At Rocky Flats on April 29, 6,000 demonstrated against the 'nuclear triggers' plant, the heart of the weapons complex, and 75 were arrested. Since then, rail tracks into the plant have bene picketed non-stop. At Hollywood (California) on May 21, 12,000 attended an anti-arms anti-nukes rally. On May 27 there were 4,000 demonstrators against the Trident missile base at Seattle and 300 arrested, and 20,000 at a rally for nuclear disarmament and against 'peaceful' nukes in New York. On June 12, 400 people demonstrated outside the US mission to the United Nations, in connection with the UN disarmament conference."

In Canada, the Saskatchewan provincial government decided to put profits ahead of peace: "Uranium is to be allowed in the Canadian province of Saskatchewan 'at a planned and measured pace'. This decision was announced by the provincial prime minister within days of the publication of the Cluff Lake Enquiry report, 1050 pages long, which took 18 months. The Saskatchewan Council for International Cooperation has said that the enquiry board "astonishingly not only gave carte blanche to uranium development but also announced that the 'morality' of the issue was of no concern to them because the province has no nuclear reactors, and because our contribution to the nuclear stockpile is insignificant in world affairs"!"

Issue #2 goes on to note that in October 1977, chiefs of Indian tribes in northern Saskatchewan unanimously decided to boycott the Cluff Lake Enquiry, saying it was not asking whether mining should be expanded, but how.

Nuclear Monitor #2 also noted that companies in the US were profiting from uranium mining on indigenous peoples' lands in New Mexico and elsewhere. That included drilling into Mount Taylor, regarded as a sacred place by Navajos and certain Pueblo tribes. The Dalton chapter of the Navajo reservation had recently voted against mining in the area. Nonetheless, Mount Taylor was mined from 1979–90. In June 2008, the New Mexico Cultural Properties Review Committee voted in favor of a one-year emergency listing of more than 422,000 acres (171,000 ha) surrounding the mountain's summit on the state Register of Cultural Properties. The Navajo Nation, the Acoma, Laguna and Zuni pueblos, and the Hopi tribe of Arizona asked the state to approve the listing for a mountain they consider sacred to protect it from an anticipated uranium mining boom.[2]

The Bataan nuclear plant in the Philippines

Issue #2 reported:

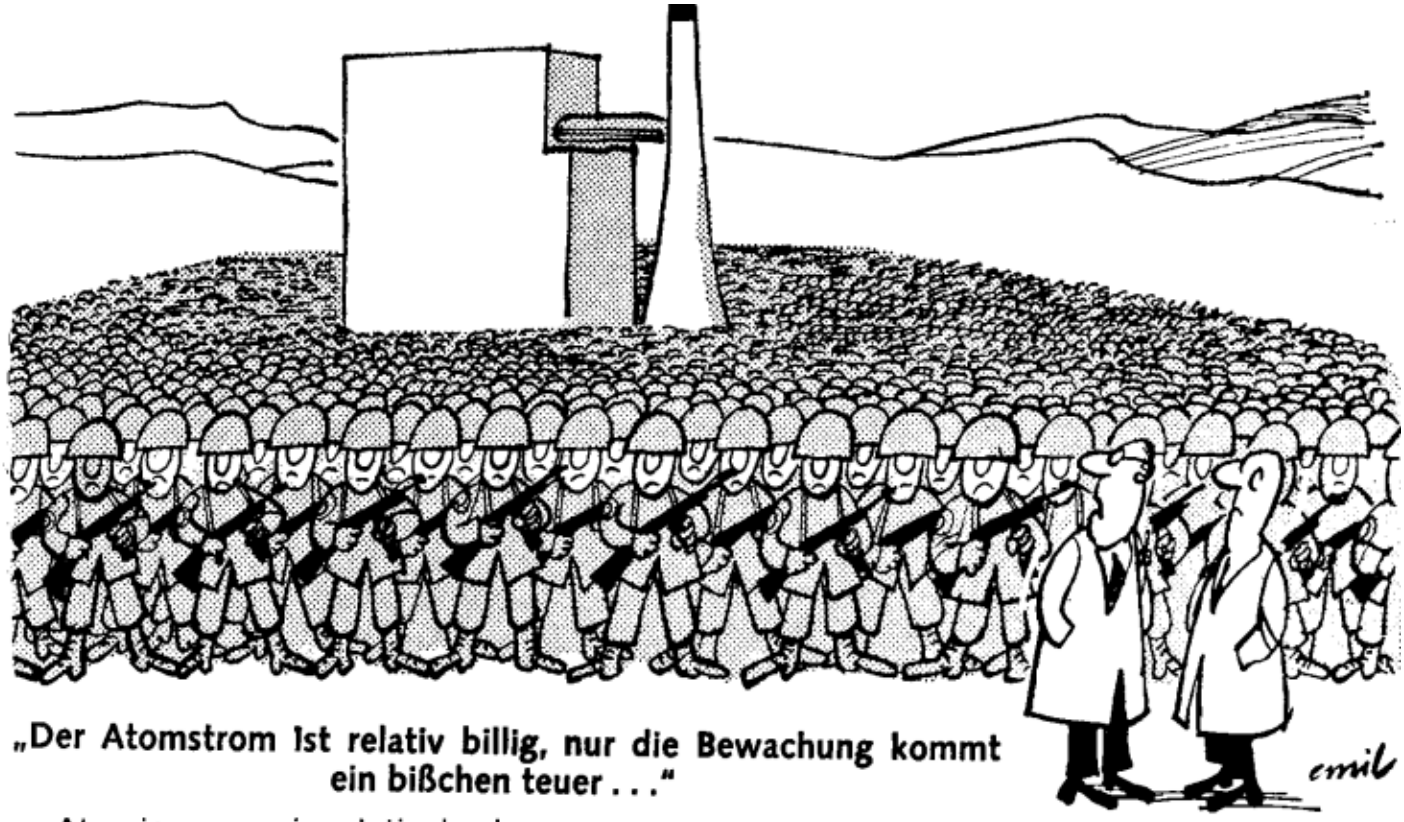
"At Morong, in Bataan Province, Philippines, Westinghouse is building a 620 MWe nuclear power plant that is a model of how to sell nukes to the third world:

1) *It is unrelated to local needs: the electricity will go to a nearby 'free trade industrial zone' for export industry, 70% of it foreign-owned, with repatriation of all profits allowed;*
2) *The contract was acquired via political corruption …*
3) *Of the $1.1 billion cost, $644 million is met by loans from and guarantees from the Exim-Bank. Westinghouse and Marcos are totally cynical about safety. …*
4) *There are no facilities, or plans, for disposal of radio-active waste.*
5) *Reactor building work has reduced the fish catch by 95%, farmers have been expelled, and others had land flooded."*

"The Morong plant fits into the world nuclear pattern. Enriched uranium for it is due to come from South Africa (where all publications about nuclear energy are prohibited) and probably Australia (where opposition has now been gagged). In the Bataan province, 25,000 people signed a petition against the plant, but martial law under the Marcos dictatorship prevents effective opposition.

"On April 27 1978 there was an international day of protest against the Philippine reactor, with demos in San Francisco, New York, Tokyo, and in the Netherlands."

Corazon Valdez-Fabros from the Nuclear Free Philippines Coalition reported on the subsequent history in Nuclear Monitor #499.[3] Construction of the Bataan plant was immediately stopped after the Three Mile Island accident in 1979 – and never restarted. An inquiry on the plant's



«Atomic energy is relatively cheap, only the security costs rather a lot...»

safety revealed 4,000 defects. "Today, the Bataan Nuclear Power Plant stands as a monument to man's folly, to pride and refusal to admit a mistake – a grim memorial of the betrayal of the Filipino people."

In 1995, President Ramos signed Executive Order 243, "Comprehensive Nuclear Power Program for the Philippines 2000".[3] The order envisaged about 25,000 MW of nuclear capacity by 2020. Nothing came of those plans. *Nikkei Asian Review* recently reported that Rosatom claims the Bataan plant can be made operational with an investment of US$3–4 billion.[4]

Nuclear waste

The provincial government of Ontario in Canada approved a joint nuclear waste management program with the national government. Work was to begin in 1979 locating a site for deep burial of vitrified waste. The aim was to dispose of 100,000 metric tons of waste by the year 2000. "Opposition is not lacking", issue #2 reported, with 15,000 people in north-west Ontario calling for open public hearings. Forty years later, the search for a disposal site continues.

Issue #2 reported on the infamous Waste Isolation Pilot Plant in the US state of New Mexico. State residents were 74% opposed to the deep underground dump for military-origin long-lived nuclear waste. The dump opened in 1999, and was closed for three years after a chemical explosion in one of the waste barrels in February 2014.

In June 1978, Dutch groups got inside information that a shipment of radioactive waste from various European countries was to be loaded at the port of Ijmuiden near Amsterdam, for disposal in the Atlantic. A protest march attracted 400-500 people but the ship was loaded under police and army protection. When police failed to dislodge 50 protesters occupying the lock-gates in order to stop the ship leaving, the gates were opened at risk to human life. Barrels from Switzerland, supposed to withstand pressure of 4,500 meters, had started to leak at sea-level pressure on the train to Amsterdam. Dutch waste was found to have a surface radiation level five times the permitted maximum.

In Germany, Lower Saxony's prime minister appeared to be looking for a way out of the Gorleben waste disposal and reprocessing complex. He appointed a commission of enquiry and included on it such "persuasive sceptics" as Amory Lovins, Walt Patterson and Dean Abramson.

Farmers owning 80% of the planned Gorleben nuclear waste site were refusing to sell and faced compulsory

land acquisition. The local citizen action group called for decentralized protest action when test drilling began, and a protest camp was planned for July 1978. Four hundred police were to be stationed permanently in the area. (From the mid-1990s onwards, annual Castor shipments to Gorleben were disrupted by tens of thousands of protesters and protected by tens of thousands of police.)

Other issues

Women fighting nuclear energy: "We live in a society where the basis of government and capital power is oppression. On this strength the nuclear industry proceeds, completely ignoring the demands of the people. But for women, as for gay people, ethnic minorities and children this oppression is too often built into the anti-nuclear movement. Awareness of this is growing: in Australia this year a motion was passed requesting all groups to eliminate attitudes and actions which are oppressive. Many women choose to work in feminist anti-nuclear groups, fighting for a non-nuclear society, and one in which they will not be oppressed. These groups publish, hold workshops and conferences and work in the movements from a feminist perspective."

Recent discoveries of uranium in Kvanefjeld, Greenland "have whetted appetites in Brussels", issue #2 reported. "Greenland has to decide soon whether to remain inside the EEC (it joined when dependent on Denmark). … It is denied in Brussels that EEC wants to keep Greenland because of its uranium!" Forty years later, 'test work' is proceeding at Kvanefjeld and mining is some way off … perhaps another 40 years.

Issue #2 reported on an early example of astroturfing: "A European 'nuclear action group' was established in Gorleben (of all places), with its headquarters in Denmark (!!) and an office in Brussels. It claims 32,000 members (already!) and will seek to 'counter one-sided information given to the public by anti-nuclear groups'. Draw your own conclusions!"

The regional authority of the Essomes area, near Paris, agreed to the construction of a prototype 'Thermos' mini-reactor, to be used for urban heating in towns of around 30,000 people. "There was no debate about such problems as low-level radiation, dangers from fuel transport, possible proliferation of such reactors." The project seems to have sunk without trace. Meanwhile, the Agence de Presse Ecologie released a "full (and frightening) analysis of the background and techniques of the 'Thermos' mini-reactor and its implications, not least foe military proliferation".

Work on the Seabrook nuclear power plant in the US state of New Hampshire was halted on 21 July 1978 by a 2-1 vote of the Nuclear Regulatory Commission (NRC).

Building can be resumed only after an Environmental Protection Agency review of the proposed cooling system. The ruling followed a 15,000 strong protest, and another protest (with arrests) outside the NRC.

In Japan, 200 opponents of the proposed Kashiwazaki plant stormed into hearings while local residents due to speak boycotted the hearing. Authorities had allowed on 70 opponents into the hearings, and of the 3,000 people who submitted statements, only 43 were asked to speak.

A district court in Japan rejected a law-suit filed by local opponents against the building licence for the Ikata power plant. With the weight of evidence against the plant, the state intervened in March 1977, replacing the presiding judge with a notorious "anti-eco reactionary".

Plans for four power reactors at Cattenom, France were being opposed by citizens in France and neighboring Germany and Luxembourg. A three-country coordinating committee was leading the fight. About 4,000 people attended the first protest demo at the site on 4 June 1978.

Plans for a nuclear power plant in Luxembourg were definitively dropped in June 1978. The reasons for dropping the proposal involved 'electoral tactics', and the energy minister admitted that Luxembourg did not have the police resources to cope with foreseeable protests.

Nuclear Monitor #2 is online at www.wiseinternational.org/nuclear-monitor/2/nuclear-monitor-2-july-1978

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Anti-nuclear Summer Camp near Narbonne, France, August 6-12

We want to invite you to share your knowledge, experiences, and a warm feeling of resistance at our international Anti-nuclear Summer Camp near Narbonne, France, from August 6-12, 2018.

Our group is made up of independent anti-nuclear activists from around the world, and our aim is to organize a gathering for international networking and the sharing of knowledge and experiences related to anti-nuclear topics. In addition to this, we wish to incorporate the fun and exciting feeling of a summer camp to the time we spend together.

The summer camp will be structured with two main topics. One will be the uranium conversion facility of the company Orano (formerly Areva) in Narbonne-Malvési. We think it is important to support the local groups and to share knowledge about developments in uranium conversion processes like the disposal of radioactive waste. The uranium conversion facility Narbonne-Malvési is supposed to process 21,000 tons every year to uranium tetrafluoride (UF4) in the next years. Orano also wants to make money with the vaporizing of liquid radioactive waste into the atmosphere in a “clean” process. And Orano wants to sell this new process to other companies. Orano for the next 40 years or more has permission to emit radioactive gases from more than 350,000 cubic metres of liquid radioactive waste into the atmosphere. The health risks for flora, fauna and mankind are serious and dangerous.

During the camp there will be at least one action day against the nuclear industries in Narbonne or close to Narbonne.

The other will be safety issues associated with the transport of uranium and its by-products across the nuclear fuel chain including radioactive waste.

Within the program there will be space and time to share experiences and knowledge, and to prepare projects or campaigns. We also want to make space for informal meet and greets, artistic and cultural exchanges, siestas and little feasts. Hopefully there will be a music band playing on one evening at our campsite. In the evening we want to provide the opportunity to show films from your current anti-nuclear work – bring your films to the camp!

Our camp will coincide with the anniversaries of the atomic bomb drops on Hiroshima and Nagasaki on August 6th and 9th, respectively. Thus, we wish to take this opportunity to remember the high death toll of the atomic bomb, and to stress the dangers of nuclear war.

We need support for anti-nuclear workshops, lectures and discussions. Everyone is welcome to offer workshops or presentations on nuclear topics. We hope many participants will talk about the anti-nuclear struggles or about the nuclear policy in their regions. Also, we seek your support to make the collective action day(s) successful.

For our camping needs we will construct some infrastructure on the olive grove, such as compost toilets, solar showers, kitchens etc. We want to organize whispering-translations (non-professional) in the workshops and presentations for Spanish, French and English speakers or more – with your help.

The campsite will be at a lovely field less than 10 km from Narbonne on the Mediterranean Sea. Bring your own tents, sleeping bags, music, instruments or your cabaret art to this summer camp. For those of you who are looking for a more comfortable accommodation, we advise you to contact the tourist information in Narbonne (www.narbonne-tourisme.com).

Please promote the International Anti-nuclear Summer Camp 2018 to your networks!

This invitation is a first announcement. There will be more specific information on the camp, program, directions, location and more in the coming months.

If you are interested in the camp or in supporting it, please get in touch with us via the contact email address: camp2018 AT nuclear-heritage DOT net

Please send registration emails with the number of attendees and planned dates to: camp-registration AT nuclear-heritage DOT net

– Solidarity from the Anti-nuclear Summer Camp organizers!

Die-in at the Gates of Hell, Olympic Dam uranium mine, South Australia, July 2016.

Is a decarbonized electricity system with a mix of renewables and nuclear reasonable?

Crag Morris has written a detailed (57-page) paper arguing that nuclear is largely incompatible with a combination of solar and wind.

When nuclear (in)flexibility is discussed, it is often explained with documentation of single reactors – but a systematic investigation of the demonstrated flexibility of entire nuclear fleets is what matters if nuclear is to complement wind and solar. Morris's paper investigates the issue and finds that the French and German reactor fleets – held to be the most flexible worldwide – do not seem to have ever ramped by more than a third of their rated capacity in a day, which is less than gas and coal.

Morris further notes that the economic impact of ramping on nuclear reactors is often omitted. A mix of nuclear along with wind and solar will drive up the amount of curtailment and storage required and this mix "will thus be more expensive than a supply based primarily on nuclear (with little solar and wind) or based on solar and wind (with no nuclear)."

He argues that "the "balanced mix" of nuclear, wind and solar will be the most expensive option – unless future nuclear reactors can ramp like current open-cycle gas turbines."

Claims about nuclear being necessary towards "deep decarbonization" are often based on misunderstandings about Germany, specifically claims that Germany has needed coal to replace nuclear. In fact, Germany replaced the power from the eight reactors closed in 2011 with new renewables in only three years and had less coal power in 2016 than in 2010.

Craig Morris, January 2018, 'Can reactors react? Is a decarbonized electricity system with a mix of fluctuating renewables and nuclear reasonable?', Institute for Advanced Sustainability Studies (IASS) Discussion Paper, http://publications.iass-potsdam.de/pubman/item/escidoc:2949898:4/component/escidoc:2949901/IASS_Discussion_Paper_2949898.pdf

India planning uranium production increase

India is planning a ten-fold increase in uranium production by 2032, Minister of State Jitendra Singh told parliament on March 7.[1] State-owner Uranium Corporation of India Ltd (UCIL) has outlined plans to meet the vision of achieving self-sufficiency in uranium production.

India produced just 385 tonnes of uranium (tU) in 2015 (0.6% of world production[2]) and a ten-fold increase would still make India a marginal contributor in global terms. But a ten-fold increase – if it occurs, which it won't if history is any guide – would comfortably meet India's domestic demand. India's demand in 2017 was just 843 tU according to the World Nuclear Association, just 1.3% of global demand.[3]

If uranium mining does expand, it will occur in a context of demonstrably inadequate standards. Charan Teja's recent article in *The NEWS Minute* discusses problems surrounding the UCIL's Tummalapalle mine in in Kadapa district of Andhra Pradesh.[4] Locals complain that the tailings pond is leaking and the spreading contamination affects agriculture and other forms of livelihood.

Locals also complain that land acquisition for the mine and processing plant was done in a highly coercive manner. Rapid Action Force personnel were deployed and they chased locals away from a venue hosting a public hearing conducted by the Andhra Pradesh Pollution Control Board.

In December 2016, researchers from Jawaharlal Nehru Technological University analyzed samples of water and soil and said the "increased levels of barium, arsenic, cobalt, chromium, copper, molybdenum, lead, vanadium and yttrium are a major concern for suitability of agricultural and other land management practices."

G. Mahesh Reddy, a farmer from one of the affected local villages, said that several farmers had stopped cultivation, fearing pollution in the soil. "While our crops are being damaged on one hand, we don't even know how safe our drinking water is," he said.

Dr K. Babu Rao, a retired scientist of the Indian Institute of Chemical Technology and a Human Rights Forum activist, said: "Trial runs were conducted for the pilot studies from 2012 and for 5 years there was unchecked dumping of chemical wastage … which led to deterioration of the soil in the area."

Recently, a team of experts from various departments of the Andhra Pradesh state government found that soil in three villages affected by the Tummalapalle mine was alkaline with a pH range in between 8.5 and 10 which "generally hinders crop growth". It also noted that the availability of nutrients for the plants to grow was also very low.

Locals say that UCIL is considering paying compensation for damaged crops and may also offer jobs for farmers at its mine and processing plant. Villagers fear that they will have no option other than to accept whatever UCIL offers.

1. World Nuclear News, 8 March 2018, 'India plans tenfold uranium output growth', www.world-nuclear-news.org/UF-India-plans-tenfold-uranium-output-growth-0803187.html
2. www.world-nuclear.org/information-library/facts-and-figures/world-nuclear-power-reactors-archive/reactor-archive-december-2015.aspx
3. www.world-nuclear.org/information-library/facts-and-figures/world-nuclear-power-reactors-and-uranium-requireme.aspx
4. Charan Teja, 4 March 2018, 'Uranium Mine Killing Livelihoods and Health: A Ground Report from Tummalapalle, Andhra Pradesh', www.dianuke.org/uranium-mine-killing-livelihoods-health-ground-report-tummalapalle-andhra-pradesh/

Turkey's first nuclear power plant delayed

Turkey's first nuclear power plant is likely to miss its 2023 target start-up date as Russian builder Rosatom struggles to find local partners. Rosatom is looking at four Turkish companies as possible partners, but little progress has been made so far, sources told Reuters.

Rosatom said in February that it was in talks with state-owned power producer EUAS after a deal with a consortium of three firms collapsed. "Concrete progress has not been made in the talks so far, and this includes EUAS from the government side," a source said.

Rosatom is looking for Turkish partners to take a 49% stake in the planned Akkuyu nuclear plant in southern Turkey. But the government is wary of EUAS taking on the 49% stake by itself. "A 49% stake still means $10 billion of funding even if it's spread over years," the source said. "It is a very big project, there are many details and issues that need to be worked on. We can't expect this to be resolved soon."

The project is to be financed by Rosatom and its partners and will involve loans from export-import agencies and banks, Anastasia Polovinkina, director of Rosatom affiliate Rusatom Energy International said in June 2017.

The 4,800 megawatt Akkuyu plant is a intended to reduce Turkey's dependence on energy imports but has been beset by delays since Russia was awarded the contract in 2010. Turkish companies have been put off by the size of the financing required as well as by concerns they will not receive a sufficient share of the lucrative construction side of the deal, two industry sources said. The firms are also worried that the guaranteed electricity price could eventually be lowered, reducing future revenue, they said.

Rosatom last year said it would sell 49% of Akkuyu Nukleer AS, the company which will build and operate the plant, to a consortium made up of Kolin Insaat, Kalyon Insaat and Cengiz Holding – Turkish firms that have been awarded major infrastructure projects under Erdogan. However, the final agreement was never signed and Rosatom said Kolin and Kalyon had decided to pull out of the project.

Cengiz remains as a contractor and Rosatom said last month that the two were in talks regarding other "partnership options". Rosatom has said it expects to find new investors for the project this year, adding that could be a single investor for the entire 49% or several firms taking smaller stakes.

Rosatom has still not received a full construction licence from Turkey's atomic energy authority.

Abridged with light editing from: Orhan Coskun and Can Sezer / Reuters, 10 March 2018, 'Turkey's planned $20 bln Russian-built nuclear plant facing delay', https://af.reuters.com/article/commoditiesNews/idAFL5N1QQ2AO

US weakens nuclear plant security standards

David Lochbaum, director of the Nuclear Safety Project for the Union of Concerned Scientists, writes:

On March 11, 2011, the one-two punch from the Great East Japan Earthquake and the tsunami wave it triggered left workers at the Fukushima Daiichi nuclear plant in Japan powerless to prevent three reactors from melting down. In March 2017, the Japan Center for Economic Research estimated that the cleanup cost could range from $470 billion to $658 billion.

The conclusions Japanese and U.S. institutions made about why the Fukushima facility was so vulnerable to such an accident were strikingly similar. The commission created by Japan's National Diet concluded that its "root causes were the organizational and regulatory systems that supported faulty rationales for decisions and actions."

The U.S. National Academy of Sciences (NAS) committee that investigated the accident similarly concluded "that regulatory agencies were not independent and were subject to regulatory capture." According to the NAS report, regulatory capture is "the processes by which regulated entities manipulate regulators to put their interests ahead of public interests." It found that the plant's owner "manipulated the cozy relationship with the regulators to take the teeth out of regulations."

In response to the accident, Japan established an agency, the Nuclear Regulation Authority. The NRA is not a clone of the U.S. Nuclear Regulatory Commission (NRC), but it clearly is patterned after the U.S. agency, adopting many of its principles and policies to safeguard public health and safety.

Now, in an odd nuclear safety yin and yang, while Japan's NRA strives to beef up its role as an effective, independent regulator, the NRC is backsliding towards becoming a cozy captive enforcing toothless regulations.

After the 9/11 terrorist attacks, the NRC upgraded nuclear plant security. The upgrades included increasing the frequency of "force-on-force" tests, which determine whether security staff can thwart an assault on a plant. A team of mock intruders visited each operating nuclear plant at least once every three years and simulated four sabotage attempts against the plant's gates, guards and guns.

The force-on-force tests either demonstrated security was sufficient or identified weaknesses for correction before actual intruders could exploit them. But plant owners complained about the cost, so the NRC has reduced the number of force-on-force exercises from four to one and is even considering allowing the plant owners to conduct the tests themselves.

Plant owners also complain about the high cost of NRC safety inspections and have targeted some of the NRC's most important inspections, such as of fire protection measures, for replacement with self-assessments.

Abridged from: David Lochbaum, 11 March 2018, 'Seven years later: Contradictory responses to Fukushima', http://thehill.com/opinion/energy-environment/377448-seven-years-later-contradictory-responses-to-fukushima