

THE COGEMA FILE

Incidents impacting the environment, health and the law
by the French nuclear company, COGEMA.

Implications for the performance of COGEMA, Inc. and its U.S. weapons
plutonium contract in South Carolina.

The Safe Energy Communication Council

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ABOUT SECC: The Safe Energy Communication Council (SECC) is a national, non-profit coalition of ten environmental and public interest media groups. Since 1980, SECC has educated the public and the media about energy efficiency and renewable energy's potential to produce a larger share of our nation's energy, as well as the economic and environmental liabilities of nuclear power. SECC provides local, state and national organizations with technical assistance through media skills training and outreach strategies.

Established as the environmental community's response to the nuclear industry's public relations campaign following the Three Mile Island accident, SECC collaborates with and draws on the expertise of its diverse member groups to affect energy policy at the national, state and local level. SECC's media consultation and/or training services have been used by energy, environmental, agricultural, consumer, and public interest activists in all 50 states.

Key Terms

Becquerel (Bq): Unit of measure for nuclear activity (1 Bq = 1 disintegration of atomic nucleus per second). It is an extremely small unit, equivalent to about 27 picocuries. Nuclear activity was previously measured in Curies (1 Curie = 37 GBq).

Curie (Ci): Unit of radioactivity. The amount of radiation emitted in one second by one gram of pure radium. Equal to 37 billion disintegrations per second. .

Sievert (Sv): Unit indicating the biological damage caused by radiation, i.e. the percentage of energy from an ionizing ray that is absorbed by 1 kilogram of living matter. One joule of beta or gamma radiation absorbed per kilogram of tissue has 1 Sv of biological effect; 1 J/kg of alpha radiation has 20 Sv effect and 1 J/kg of neutrons has 10 Sv effect. Also:

the millisievert, abbreviated as mSv, which is 0.001 Sv (a thousandth of a Sv)
the microsievert, abbreviated as µSv, which is 0.000,001 Sv (a millionth of a Sv)

The COGEMA File

Introduction

An investigative report released earlier this year by the Safe Energy Communication Council (SECC) and the Institute for Energy and Environmental Research (IEER) revealed that the French nuclear company, COGEMA, has a record of brushes with the law and scientifically questionable decision-making in France. This is important to the U.S. public because COGEMA's U.S. subsidiary, COGEMA Inc., is set to process surplus weapons plutonium into commercial reactor fuel, known as MOX, in the United States. The MOX is to be manufactured at the Savannah River Site in South Carolina. This report examines the environmental, health and safety implications of the U.S.

contract with COGEMA Inc. COGEMA is particularly eager to see this contract move forward since its only commercial MOX clients, Germany and Japan, are rapidly losing enthusiasm and popular support for the use of MOX. Germany is due to phase out nuclear power while Japan lost confidence in imported MOX after the British Nuclear Fuel (BNFL) data falsification scandal and other problems in the nuclear sector. COGEMA, along with Belgonucleaire, is the only manufacturer of commercial MOX in the world. No company has direct experience manufacturing MOX from weapons plutonium as the U.S. project proposes.

The May 2002 report - **COGEMA: Above the Law?** – documents how COGEMA has arbitrarily established its own acceptable levels of radiological discharge into the English Channel from its La Hague reprocessing site in northern France. These levels contradict the Linear No Threshold model adopted by the international scientific community that states there is no level of radiation exposure below which there is no effect. The SECC-IEER report also describes the numerous and on-going legal challenges COGEMA has faced in the French courts for defying the country's nuclear waste laws, even though COGEMA is more than 85 percent owned by the French government. Finally, the report reveals COGEMA's unwillingness to accept the possibility that local leukemia clusters among children and young people might be connected to the contamination of beaches and seafood by its La Hague operations.

COGEMA's flagship is the giant reprocessing facility at La Hague. Reprocessing, which extracts plutonium and uranium from spent nuclear fuel, creates a tremendous volume of additional radioactive waste - as much as 189 times more than that contained in the original irradiated fuel.¹

The COGEMA File is a compilation of incidents of concern about activities involving COGEMA that jeopardize human health and the environment. All 16 items are a matter of public record and citations are provided where appropriate. The first three items in this supplementary report were documented in detail in **COGEMA: Above the Law**, located on the SECC web site at: www.safeenergy.org. These publicly reported items are consequently given less attention here. Items 4 through 16 do not form a part of IEER and SECC's joint report and have not been substantiated independently by SECC. However, all 16 issues consistently demonstrate COGEMA's record of pollution, contamination, disregard for international law, corporate secrecy, accidents and cavalier approach to issues of human health.

Findings

(1) COGEMA circumvents the Oslo-Paris (OSPAR) Convention for the Protection of the Marine Environment of the North-East Atlantic agreement for zero release of radioactive substances.

Under the terms of the OSPAR Convention of 1992, European countries (with the exception of France and Britain), agreed on a ban on the dumping of low- and intermediate-level radioactive substances into the sea.² Although France later agreed to abide by the ban, a technical loophole has allowed COGEMA to circumvent this obligation. At the 2000 OSPAR meeting, a zero release policy was adopted by 12 countries with France and Britain abstaining.³ In order to appease its disgruntled European neighbors, COGEMA has adopted what it calls a "zero impact" release policy, in place of "zero release."⁴ The intention of OSPAR was a commitment to achieve concentrations in the environment close to zero ("zero release") not concentrations in discharges. In an October 1999 interview with the French daily newspaper, *Le Monde*, then recently appointed COGEMA president, Anne Lauvergeon declared that COGEMA's stated "threshold dose" of 30 microsieverts "has no health risks" and was part of the company's new concept of "zero impact on health."⁵ In reality, a threshold dose of 30 microsieverts contradicts accepted international standards set by the U.S. National Research Council of the National Academy of Sciences and others.⁶ Furthermore, it shows that COGEMA has arbitrarily set its own scientific standards rather than conform to internationally recognized and accepted regulations. In fact, if the La Hague discharges were to be transported in containers in the U.S., they would need a special permit under U.S. Department of Transportation law and would qualify as low-level radioactive waste.⁷

(2) COGEMA rejects cancer cluster study findings, claiming no culpability.

A study conducted by Dominique Pobel and Jean-Francois Viel of the Department of Public Health in Besancon, and published in the *British Medical Journal* in 1997, looked at populations within a 35-kilometer radius of the La Hague reprocessing plant. The study concluded that children and young people who played on beaches near La Hague and ate the local seafood had "a small but increased risk of childhood leukemia in the electoral ward in which the plant is situated."⁸ Pobel, a research epidemiologist, and Viel, professor of biostatistics and epidemiology, declared: "Our main finding was that some lifestyle factors are associated with the development of

leukemia among young people, suggesting contamination with radiation through an environmental route.”⁹ They recommended that: “New methods for the identification of the environmental pathways (focusing on marine ecosystems) and their integration in the dose reconstruction process for children are clearly warranted.”¹⁰

A second study, published in the July 2001 issue of the *Journal of Epidemiology and Community Health* by Dr. A. Spira, et al has also found an increase in childhood leukemia around La Hague. The researchers concluded:

This study indicates an increased incidence of leukemia in the area situated at less than 10 km from the plant. Monitoring and further investigations should be targeted at acute lymphoblastic leukemia occurring during the childhood incidence peak (before 10 years) in children living near the La Hague site and maybe other nuclear reprocessing plants.¹¹

However, COGEMA continues to deny any responsibility, stating on its web site that its activities are “free of sanitary consequences for the public and the environment.”¹² Thus, COGEMA rules out causation, instead thrusting the burden of proof upon the victims rather than on the alleged perpetrator. This contradicts the Precautionary Principle that is clearly laid out in various binding international agreements including Agenda 21 signed by all world leaders including France at the 1992 United Nations Earth Summit in Rio de Janeiro, that declares radioactive wastes to be among “the contaminants that pose the greatest threat to the marine environment.”¹³ The Earth Charter of March 2000, initiated after the Rio Summit failed to complete the charter, also urges that authorities “place the burden of proof on those who argue that a proposed activity will not cause significant harm, and make the responsible parties liable for environmental harm.”¹⁴ The Earth Charter’s Secretariat is based in Costa Rica and was drafted by the Earth Council and Green Cross International.

(3) COGEMA is the subject of law suits for endangering people's lives and illegal importation of radioactive waste.

Several lawsuits are on-going against COGEMA for activities likely to cause harm to populations around La Hague. One such, filed by a local group, the Committee for Reflection, Information and Anti-Nuclear Struggle, (known as CRILAN), alleged that COGEMA was endangering the lives of citizens living near La Hague because it is illegally holding foreign nuclear waste there. The storage of foreign nuclear waste is illegal under French law unless the waste has authorization to be reprocessed and returned to its country of origin. Despite this, waste has remained on site at La Hague, effectively turning the facility into a nuclear waste dump. Additional legal trials have revealed that COGEMA neither had the paperwork for, nor the intention to, reprocess illegally imported waste from Germany and Australia.¹⁵ In the case of the waste fuel imported from Australia, COGEMA was ordered in July 2001, to produce “the necessary authorizations to reprocess” or “ship the fuel assemblies stored in France back to Australia, under threat of penalty if necessary.”¹⁶ After the local prefect as well as COGEMA attempted to declare this ruling non-competent, a July 1, 2002 court decision upheld the ruling.¹⁷ These trials are on-going and are described in detail in *COGEMA: Above the Law?*

(4) A report prepared for the European Parliament has found reprocessing discharges are equivalent to an annual major nuclear accident.

The Scientific and Technological Options Assessment (STOA) report released in November 2001 by the European Parliament shows that the combined effect of discharges from the La Hague and Sellafield reprocessing facilities constitutes “the world’s largest releases of radioactivity into the environment, corresponding to a large-scale nuclear accident every year.”¹⁸ The authors observed that: “radioactive discharges from both sites are very large and indeed rank among the largest anthropogenic sources of radioactivity to the world.”¹⁹ The report added that “some of the radionuclides released in great quantities have half-lives of millions of years. Concentrations identified in recent years in the environment repeatedly exceeded EU Community Food Interventions Levels (CFILs.)”²⁰

(5) The radioactive cloud routinely released from La Hague is highly toxic.

In 1998, Greenpeace commissioned an atmospheric study that revealed concentrations of Krypton-85 present at 60-120 meters above COGEMA’s La Hague plant measured at thousands of times higher than natural radiation levels.²¹ The analysis, conducted by the University of Groningen in the Netherlands, found that levels measured were 90,000 becquerels per cubic meter, compared to normal air levels of 1 to 2 becquerels per cubic meter.²² Prevailing winds tend to drive the cloud directly over Great Britain and the Channel Islands.²³ While Carbon-14, the major contributor to collective doses, has been partially removed from air emissions at Sellafield, all of it is

released at La Hague. According to the findings of the STOA report, abatement of Carbon-14 is not considered cost-effective by COGEMA."²⁴

(6) Contamination of the sea by La Hague classifies water and sediment as nuclear waste.

Samples of sediment and water retrieved from the area around the La Hague discharge pipe by Greenpeace between 1997 and 1999 were found to be so radioactive that in the United Kingdom they would be classified as intermediate-level radioactive waste.²⁵ The La Hague water was found to be 17 million times more radioactive than ordinary seawater with a beta particle activity of up to 216 million becquerels per liter compared to normal seawater's 12 becquerels per liter.²⁶ The analysis was performed by the independent French radiological laboratory (ACRO).²⁷ If removed from the sea, it would be illegal to transport such wastes under European law.²⁸ The London Convention has, since 1993, banned the disposal of nuclear waste in the sea. However, this is in effect what COGEMA does on a daily basis.²⁹ COGEMA's initial response to the Greenpeace sediment testing was to sabotage the underwater sampling equipment on three occasions in a single week.³⁰

(7) Fishing and bathing restricted in contaminated waters around La Hague.

In 1997, Dominique Voynet, the French Environment Minister, announced that access to the area around COGEMA's La Hague discharge pipe would be restricted. The area around the pipe was closed to fishing and bathing following independent analysis of water samples conducted by the Department of Labor, Health and Social Services of the Federal State of Hamburg, Germany.³¹ The analysis found that the sediments contained such high levels of radioactive americium, antimony, barium, cesium, chromium, europium and manganese that, under U.K. regulations, it would be handled as intermediate-level nuclear waste.³²

(8) A hollow promise of greater transparency.

In October 1999, COGEMA president Lauvergeon, told *Le Monde* that COGEMA's culture of secrecy would end.³³ "It's essential to re-establish a peaceful dialogue with everyone who voices concerns," Lauvergeon told the newspaper. "We live in an anxious society. Food safety and the nuclear industry are in part responsible for this. We have to accept these concerns, not reject them."³⁴ However, little has changed. In 2000, COGEMA installed 10 webcams in and around the La Hague facility in a token attempt to allow the public to "monitor" the site via the internet and prove, according to Lauvergeon, that COGEMA had "nothing to hide."³⁵ However, COGEMA continued to "hide" its underwater discharge pipe from public observation, a service that was provided, instead, by Greenpeace whose camera monitors the 230 million liters of radioactive liquid waste discharged by the plant each year.³⁶ COGEMA disconnected its own cameras after the September 11 attacks. COGEMA refuses to make public any documents about the discharges and has attempted to charge approximately \$100 per document before releasing certain papers to the public, according to Greenpeace.³⁷ COGEMA has also refused to place any of these documents on the Internet.³⁸

(9) COGEMA refuses order to close dangerous MOX plant site.

In July 2000, the French Nuclear Safety Inspectorate (NSI) ordered COGEMA to close its Cadarache MOX plant near Aix-en-Provence in southern France by the end of the year because it is located in a seismic area that scientists predict will be vulnerable to serious earthquakes in the near future.³⁹ COGEMA refused, instead offering to encase the plutonium treatment plant in a concrete shell. When this proved unacceptable to NSI, COGEMA threatened to move the operation to its second MOX plant at Marcoule near Avignon, at the same time increasing its MOX output despite the warnings.⁴⁰ Frustrated at the endless delays and obfuscation, one NSI official described COGEMA's actions as "blackmail" in a letter sent to Environment Minister Voynet.⁴¹ Andre Claude Lacoste, head of the NSI, told COGEMA in a January 30, 2001 declaration that if the company does not submit a closure plan, he would be obliged to "close the plant by order at the end of 2002."⁴² Germany is the only client for MOX fuel produced at Cadarache.

(10) Flawed data and poor quality control.

In September 1999, British Nuclear Fuels Ltd. (BNFL), COGEMA's British MOX and reprocessing counterpart and competitor, was caught falsifying data on MOX fuel sent to Japan. In April 2000, the German environment ministry ordered safety checks on MOX fuel made at COGEMA's Cadarache plant after it emerged that "software problems" had led to gaps in safety records in MOX fuel destined for Germany.⁴³ As a result, the German nuclear company, Siemens, sent officials to France to conduct an audit of COGEMA's MOX fuel production even after a review by Bayenwerk, the Bavarian power company, said a computerized quality control check had caused the error.⁴⁴

Despite this, quality control has not been included in the U.S. MOX fabrication plant licensing criteria, a serious omission from U.S. regulatory requirements in light of these revelations.

(11) COGEMA found to have dumped radioactive waste into community repository.

In a July 22, 1999 story, *Le Monde* reported that COGEMA had dumped more than 100,000 casks of low-level radioactive waste from its uranium conversion plant at Pierrelatte into a domestic waste repository in the neighboring community of Solerieux in Southern France.⁴⁵ Approximately 1,000 metric tons of waste was dumped per year. The waste contained calcium fluoride contaminated with uranium.⁴⁶ Attention was drawn to the situation only after a Member of Parliament, Michele Rivasi, alerted the fire department during a visit to the dump as part of her inquiry into radioactive waste disposal, according to the newspaper report.⁴⁷

(12) COGEMA's "unintentional" release of tritium.

An "unintentional" release of a significant amount of radioactive tritium gas occurred at COGEMA's Celestin nuclear installation at the Marcoule facility near Avignon on January 15, 1999.⁴⁸ About 85 TeraBecquerel (or 2300 curies) of tritium was released through the chimney.⁴⁹ The accident occurred when irradiated fuel rods were washed before they were sent to a nearby facility where the tritium is extracted. Eight of the 144 fuel rods were found to be leaking. The accident was placed on the highest level of the International Atomic Energy Authority's INES scale. A release of 85 TeraBecquerel is about 40 times the permitted annual emission of the 450 MW Dutch reactor at Borssele for example.⁵⁰

(13) COGEMA's misleading advertising campaigns.

In misleading national advertising campaigns, COGEMA has portrayed its reprocessing industry as equatable to the household recycling of plastics and claims that, contrary to the evidence, "recycling nuclear fuel is also a way to reduce waste."⁵¹ COGEMA's advertising asserts that reprocessing contributes to "preserving our natural resources, our environment and our economy."⁵² In fact, reprocessing is arguably one of the most polluting aspects of the nuclear fuel cycle.

(14) Spills and fines mark COGEMA's record of uranium mining and processing activities in France and North America.

Various violations have occurred over the years at COGEMA's Cluff Lake uranium mine in Saskatoon, Saskatchewan, Canada. In 1998, the Canadian Atomic Energy Control Board denied COGEMA a 2-year license renewal for its uranium mine in northern Saskatchewan after increased radium levels were found in nearby Snake Lake located next to the tailings management facility.⁵³ COGEMA was instead given a conditional nine-month extension while these and other problems were investigated. The problems included a two-fold increase in workers' radiation exposure.⁵⁴ The Canadian Atomic Energy Control Board also demanded that COGEMA conduct a comprehensive study of dose reduction measures among other requirements and mandated COGEMA cease mining by April 1, 1998 if it failed to comply.⁵⁵ Subsequently, COGEMA announced it would shut the mine by December 2000 but instead requested a license extension in December 21, 2001. COGEMA was granted a license through April 30, 2004.⁵⁶ The license permits the completion of the planned uranium mining and milling activities at the Cluff Lake Project.⁵⁷ The decision affects four mined-out open pits, one active and one closed underground mine, a mill, a surface tailings management facility, waste rock storage areas, an employee residence, and associated service facilities.⁵⁸

COGEMA Mining, Inc. was responsible for three separate uranium spills in less than four months – on February 4, May 2 and May 21, 1998 – at its uranium mine site in Bruni, Texas. The February 4 spill involved 2,500 gallons of restoration flow solution containing 7.2 parts per million uranium.⁵⁹ The May 2 spill involved 20,000 gallons of solution containing 8.6 parts per million uranium.⁶⁰ The May 21 spill involved 8,000 gallons containing 7.4 parts per million uranium.⁶¹ All spills were reportedly "contained within the licensed area" according to the licensee.⁶²

In 1998, the NRC recorded a finding of no significant environmental impact in granting a license renewal for the continued operation of COGEMA's Irigaray and Christensen Ranch in-situ uranium leaching facilities in Wyoming.⁶³ COGEMA was subsequently permitted to inject brines from its Christensen Ranch facility into "deep aquifers that might be a source of future drinking water."⁶⁴ A detailed list of environmental and operational problems at COGEMA's Christensen Ranch uranium facility can be found at: www/antenna.nl/wise/uranium/umopusa.html/#CHRISTENS.

After COGEMA's Chanteloube, France uranium mine closed in 1979, the vast majority – 2,400,000 out of 2,700,000 tons of ore – was simply left by the roadside on which a recreation park was then built.⁶⁵ “COGEMA presents the Chanteloube site as a model redevelopment when in fact it is nothing but a hole filled with water,” wrote CRILAN's Didier Anger in 1996.⁶⁶

(15) A title-swapping scam uncovered.

In 1988, COGEMA's Comurhex subsidiary, a uranium conversion company, was implicated in a title-swapping scam whereby it concealed or altered the precise origins of uranium consignments.⁶⁷ In March 1988, Comurhex documents surfaced at the port of Liverpool, UK, in which the French company cited an agreement with RTZ Mining Services (Minserve) for the swapping of uranium concentrates.⁶⁸ In the agreement, Comurhex promised RTZ that it would produce documents showing that uranium concentrates that entered Liverpool in April were of Canadian origin.⁶⁹ In fact, it appeared that this consignment originated in Namibia or South Africa.⁷⁰

(16) COGEMA trumps U.S. Non-Proliferation Act.

Despite the suspension of supplies of enriched uranium authorized by the Non-Proliferation Act of 1978, COGEMA sent enriched uranium to India in 1982.⁷¹ The following year, COGEMA landed contracts with five new U.S. customers, effectively wresting commercial superiority in the field of enrichment away from the U.S.⁷²

Conclusion and Recommendations

The above incidents were researched from publicly available documents. The NRC and the DOE are presumed to have access to more detailed information but the agencies have refused to open this to public scrutiny. The agencies also have declared that the activities and record of the parent company, COGEMA, are not relevant to the contracting of its U.S. subsidiary, COGEMA Inc. for weapons plutonium work at the Savannah River Site in South Carolina. For example, in a July 14, 2000 *Augusta Chronicle* article, NRC Enrichment Chief, Melanie Galloway, said of COGEMA that: “whatever their record, good, bad or indifferent, it isn't going to affect our decisions.” This assumption that COGEMA Inc. will abide by U.S. laws is unconvincing.

However, it seems clear from the incidents cited in this report that a culture of secrecy, disregard for international laws and scientific standards and a record of contamination, flawed quality control, dumping, leaks and fines is likely to permeate COGEMA Inc., just as it has COGEMA and its other subsidiaries.

It is additionally alarming that COGEMA Inc. would be processing MOX from weapons grade plutonium without any prior experience in this work. MOX currently manufactured by COGEMA is made from commercial grade plutonium. The DOE has provided no documentation to U.S. stakeholders that shows COGEMA is qualified to do this work yet claims it is satisfied with COGEMA's track record in France. Flawed quality control data on MOX manufactured by COGEMA for the German market suggests that quality control should be an essential component, not an omitted one, in COGEMA Inc.'s contractual obligations if it is allowed to operate in the U.S.

Furthermore, the market for COGEMA's French-manufactured MOX is dwindling rapidly, after Germany's planned renunciation of commercial nuclear power and vetoes by Japanese communities of MOX use as well as Japanese government skepticism following the BNFL MOX data falsification scandal. Consequently, COGEMA's chief enterprise remains its large reprocessing facility at La Hague. This could have ominous consequences since the Savannah River Site is a former reprocessing facility and there have been recent efforts by some nuclear lobbyists to revive reprocessing in the U.S. COGEMA has chosen to disregard findings of extreme contamination and health effects resulting from its own reprocessing activities and has refused to abate its discharges as requested by European governments and mandated by international laws and treaties. The prospect of a resumption of reprocessing at the Savannah River Site could have disastrous environmental and health consequences for the surrounding communities.

COGEMA Inc. should not be allowed to process weapons plutonium in the U.S., given the abysmal environmental record of its parent company, COGEMA, in France and elsewhere. Contracts should not be awarded to any company, foreign or domestic, by the DOE, without an open, thorough and public scrutiny of that company's environmental, health and safety record worldwide.

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