INSTITUTE FOR ENERGY AND ENVIRONMENTAL RESEARCH

6935 Laurel Avenue, Suite 201
Takoma Park, MD 20912

Phone: (301) 270-5500
FAX: (301) 270-3029
e-mail: ieer@ieer.org
http://www.ieer.org

COGEMA: ABOVE THE LAW?

Concerns about the French Parent Company of a U.S. Corporation Set to Process Plutonium in South Carolina

Annie Makhijani*
Linda Gunter**
Arjun Makhijani, Ph.D.*

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*** Institute for Energy and Environmental Research**
**** Safe Energy Communication Council**

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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.

Originally 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. The Council works to empower grassroots activists through information dissemination, technical assistance and media training. SECC's media consultation and/or training services have been used by energy, environmental, agricultural, consumer, and public interest activists in all 50 states.

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"[E]nforcement [of French nuclear waste law] comes into conflict with a technocratic structure [COGEMA] that considers itself above the law." - Christian Bataille, French parliamentarian and author of the French law on the management of nuclear waste.[1]

"Whatever their record in Europe, good, bad or indifferent, it isn't going to affect our decisions." - Melanie Galloway, Enrichment Section Chief, United States Nuclear Regulatory Commission.[2]

Introduction

COGEMA Inc., the U.S. subsidiary of COGEMA (the French Compagnie générale des matières nucléaires) the largest nuclear reprocessing company in the world, is currently poised to begin major work as a U.S. Department of Energy (DOE) contractor, fabricating fuel from surplus weapons plutonium to be used in U.S. commercial reactors. COGEMA is part of a new giant conglomerate, AREVA, which includes a wide-ranging combination of nuclear energy services. AREVA is about 79 percent owned by the French government's Commissariat à l'énergie atomique, France's atomic energy commission. An additional seven-percent belongs to other government or

government-owned entities.[3]

COGEMA, Inc. is already part of a consortium responsible for designing a mixed-oxide (MOX) fuel made of weapon-grade plutonium derived from the nuclear trigger component in nuclear weapons. The consortium, Duke COGEMA Stone & Webster (DCS) includes Duke Power, COGEMA, Inc. and Stone & Webster. There are also three more members: Duke Engineering and Services, an affiliate of Duke Energy Corporation, Framatome COGEMA Fuels, and Nuclear Fuel Services, Inc.

COGEMA, Inc. is the only company in the consortium whose parent corporation COGEMA is currently manufacturing MOX on an industrial scale. Therefore, the experience of its parent company is central to the reason that COGEMA, Inc. is part of the MOX fuel consortium in the United States. The record of the parent corporation is especially important in relation to legal, scientific and regulatory issues. The refusal of the U.S. Nuclear Regulatory Commission (NRC) to acknowledge this importance led us to prepare this report.

The proposed location for the MOX fuel fabrication plant is the DOE's Savannah River Site (SRS) in South Carolina. A permit request for construction of this plant was submitted on February 28, 2001, the operation license request will be submitted in July 2002 and a final environmental impact statement (EIS) is expected by September 2002. Although COGEMA has experience with the manufacture of MOX fuel from plutonium derived from commercial reactor spent fuel, the proposed project will be the first to process weapon-grade plutonium into a reactor fuel on an industrial scale.

Members of the public and some policymakers in the United States are concerned about the possible environmental and health impacts of both MOX manufacturing and preprocessing of weapons pits. Given the past poor environmental performance at the Savannah River Site, many members of the public as well as South Carolina Senator Phil Leventis have asked the DOE to thoroughly investigate and make public the home environmental and safety record of COGEMA in France.[4] According to the NRC, as represented by the remarks of its then enrichment section chief, Melanie Galloway, quoted above, COGEMA's record in France is unimportant and irrelevant. The NRC is willing to accept COGEMA's participation as long as it adheres to U.S. standards.[5] The NRC has not expressed concern about company culture at COGEMA regarding French and European law or COGEMA's attitude towards compliance with European environmental protection requirements. Instead, the NRC claims that the record of the French parent company is not relevant even though the project relies to a considerable degree on personnel from France.

COGEMA's past and recent brushes with the law in France, its arrogation of the power to decide on science relevant to public health as described below, as well as the NRC's own pattern of lax oversight, cast some doubt on that assumption.[6] The findings of this report show that COGEMA has not only tried to set itself above the law, but also above regulatory decision-making and established scientific conclusions regarding radiation risk. This includes both European and international scientific bodies and

accepted regulatory risk estimation procedures as well as corresponding science and regulations in the United States. This report provides a partial analysis of COGEMA and its actions. We have omitted many allegations of problems elsewhere due to lack of investigative resources.

COGEMA's reprocessing operations in France

The large commercial reprocessing plant (consisting of two units, UP2 and UP3) which extracts plutonium from spent nuclear power plant fuel is at the center of COGEMA's nuclear business in France. It is located at La Hague on the Normandy Peninsula. Every year hundreds of million of liters of radioactive liquid waste, a byproduct of the reprocessing operation, pour out of the discharge pipe from La Hague into the English Channel. In 1996, 500 million liters were discharged into the sea, containing a total radioactivity of 285,000 curies.[7]

The radioactivity concentration of the liquid discharges coming out of the pipe averages about 570 microcuries per liter, on a volumetric basis. This corresponds to about 570 nanocuries per gram and clearly fits the definition of low-level radioactive waste. For instance, according to U.S. Department of Transportation regulations, if this liquid waste were put into a container, it would require a special permit for transportation as radioactive waste because it far exceeds the limit of two nanocuries per gram defining such waste.[8]

It is reasonable to infer, therefore, that if the liquid waste coming out of the pipe were put into a container and then dumped into the open ocean, this action would violate the 1992 OSPAR (Oslo-Paris) Convention for the Protection of the Marine Environment of the North-East Atlantic, signed by 15 European countries and the European Communities. Its Article 3 subparagraph 3(a) says that:

> The dumping of low and intermediate level radioactive substances, including wastes, is prohibited.[9]

However, France and Britain, both signatories to the 1992 OSPAR Convention, were allowed to continue to discharge radioactive wastes into the sea:

> As an exception to subparagraph 3(a) of this Article, those Contracting Parties, the United Kingdom and France, who wish to retain the option of an exception to subparagraph 3(a) in any case not before the expiry of a period of 15 years from 1st January 1993, shall report to the meeting of the Commission at Ministerial level in 1997 on the steps taken to explore alternative land-based options.[10]

The issue of radioactive waste dumping and discharges into the seas was taken up again by OSPAR at its July 1998 ministerial meeting in Sintra, Portugal. At this meeting, Britain and France agreed formally to abide by subparagraph 3 (a) of the

1992 OSPAR Convention. In its statement the OSPAR Commission states:

> We welcome the announcements by the French and United Kingdom Governments that they wish to give up future exemptions from the ban on the dumping of low-level and intermediate-level radioactive wastes.[11]

Specifically, at the July 1998 meeting increasing concerns expressed by European governments were considered in more detail. These related to the serious level of pollution from the dumping of radioactive liquid wastes into the sea from onshore facilities, notably by COGEMA and BNFL. The Commission adopted a strategy to address this issue by stating that:

> We shall ensure that discharges, emissions and losses of radioactive substances are reduced by the year 2020 to levels where the additional concentrations in the marine environment above historic levels, resulting from such discharges, emissions and losses are close to zero.[12]

However, since July 1998, a technical loophole defining away the problem that the liquid wastes dumped into the sea are regarded as "discharges" and not "wastes" has allowed COGEMA and its British counterpart, BNFL (wholly owned by the British government), to circumvent their obligations.

At its 2000 meeting on contamination of the oceans, the OSPAR commission tightened this strategy. As a result a zero release policy was adopted by 12 of the countries:

> ...a binding decision on the reduction and elimination of radioactive discharges, emissions and losses, especially from nuclear reprocessing, was adopted by 12 states. This requires the urgent review of current authorisations for discharges and releases of radioactive substances from nuclear reprocessing plants, with a view to implementing the non-reprocessing option for spent nuclear fuel management at appropriate facilities, and taking preventive measures against pollution from accidents. France and the United Kingdom abstained, and are not therefore bound.[13]

The French and British governments that had previously agreed to the strategy for the elimination of the man-made radioactive releases abstained from the vote. In an attempt to assuage the concerns voiced by the 12 European governments without actually eliminating waste discharges, COGEMA has adopted a policy of "zero impact" on the environment, rather than a policy of "zero release". The company has described its "zero impact" policy as follows:

> COGEMA has made a commitment that impacts from COGEMA-La Hague operations, regardless of the processing campaign involved or the type of material processed, will never exceed the threshold dose of

> 30 microsieverts per year to reference members of the public. Experts consider this dose level to be synonymous with "*zero impact*", and it is the working translations of the zero release concept.[14] (Emphasis in original)

It is our view that by making this claim, COGEMA has set itself above the entire process by which science is integrated into regulations.

COGEMA becomes an arbiter of science and law

In responding to the OSPAR demand for zero discharges with the goal of "zero impact," COGEMA has taken upon itself the role of deciding what parts of the science of the biological effects of radiation are important. It has decided that there is no impact below a threshold of 3 millirem (30 microsieverts) per year. Therefore it has equated zero releases with its own idea of "zero impact" even though the releases are easily quantifiable and are clearly not zero.

The most important fact in understanding the difference between COGEMA's use of the phrase "zero impact" and zero discharges is that European and U.S. radiation protection regulations are based on the scientific hypothesis that every increment of radiation exposure creates a corresponding increment in radiation risk. This approach to radiation protection is based on many official reviews of the scientific literature. As such it has long been the accepted basis of radiation protection regulations. These reviews acknowledge that there is considerable uncertainty about the actual risks at low doses, but they have all, to date, concluded that all increments of exposure to radiation produce some increment of cancer risk.

For example, this is the view expressed in the most recently published scientific report of the committee of the U.S. National Research Council charged with assessing the effects of ionizing radiation. The committee's conclusions published in 1990 form the basis of U.S. radiation protection regulations.[15] Similar work by the International Commission on Radiological Protections (ICRP) forms the basis of radiation protection regulations in other countries.

Yet, COGEMA has stated:

> The most recent studies by international radiation protection experts establish a threshold of 30 microsieverts [per year] below which human beings are exposed to negligible risk. This threshold may therefore be viewed as a working definition of zero impact.[16]

This declaration has no basis in current regulations or the science on which it is supposedly based. So far as we can determine, it appears to have its origin in a 1999 scientific review by one scientist, Roger Clarke, the Chairman of the ICRP. In his review of the literature, he put forward his opinion that:

> At the lowest level, doses of a few tens of microsieverts [a few millrems] would be considered to be so low as to be beneath regulatory concern. There would be no need to involve any system of protection below these limits.[17]

The actual number of 30 microsieverts (3 millirem) is given in Figure 1 of the article.

However this statement is only one opinion, albeit from the Chairman of the ICRP. While this opinion by Clarke is shared by some others, there is currently no consensus even in the ICRP, much less in the scientific community as a whole, that there should be any threshold at all at which risk should be considered as effectively zero. In fact, the most recent comprehensive review of the literature, published in 2001, by the National Council on Radiation Protection and Measurements (NCRP) of the United States reaffirmed the need for a non-threshold approach for radiation protection by concluding that:

> . . . although the evidence for linearity is stronger with high-LET [Linear Energy Transfer][18] radiation [alpha and neutrons radiation] than with low-LET radiation [beta and gamma radiation], the weight of the evidence, both experimental and theoretical, suggests that the dose response relationships for many of the biological alterations that are likely precursors to cancer are compatible with linear-nonthreshold functions. The epidemiological evidence, likewise, while necessarily limited to higher doses, suggests that the dose-response relationships for some, but not all, types of cancer may not depart significantly from linear-nonthreshold functions. The existing data do not exclude other dose-response relationships. Further efforts to clarify the relevant dose-response relationships in the low-dose domain are strongly warranted.[19]

A more recent reaffirmation of the linear non-threshold hypothesis is far stronger. It comes from the Centers for Disease Control and Prevention (CDC) and the National Cancer Institute (NCI). In an August 2001 report, the CDC/NCI reviewed the "conclusions and summaries derived by these national and international expert groups" which included the United Nations Committee on the Effects of Atomic Radiation (UNSCEAR), the National Academy of Sciences (NAS), the ICRP, and the NCRP. Based on this review, the CDC and NCI concluded that "[t]he data do not suggest the existence of a threshold below which there is no excess risk."[20]

Further, the CDC and the NCI explicitly dismissed those who assert that there is a threshold for radiation risk in the following words:

> *Some think that there may be a threshold*, that is a dose below which there is no risk, though as noted previously (Section 4.2.1), *this hypothesis is not supported by currently available data*.[21] (Emphasis added)

This CDC/NCI report is a "predecisional draft." It has been submitted to the National Academy of Sciences for review.

There remain some uncertainties of course, but these cannot controvert the fact that the no-threshold hypothesis is both generally accepted by official scientific bodies and is the basis of current regulations. The next review of the subject by the National Research Council is scheduled to be completed in 2003 (this will be the "BEIR VII" report). There are, of course, many people in the nuclear industry who would like to see a threshold declared below which zero impact can be assumed. There are also some who think that some level of radiation exposure is beneficial (the "hormesis" hypothesis). On the other hand, there are others who believe that radiation risk is far higher than the official reviews indicate. It is precisely because there are conflicting claims, some of them put forward by those who might profit by their views, that official bodies have been constituted and many reviews have been conducted to the accompaniment of much public debate. One might personally hold views on radiation risk that are different from those on which regulations are based, but that cannot be the basis for actions that impact on health and the environment, such as those that occur when plutonium is processed for instance.

A dose of 30 microsieverts (3 millirem) would certainly not be regarded as zero impact under current U.S. regulations. For instance, U.S. safe drinking water regulations limit the dose to the critical organ from exposure to various radionuclides as a result of drinking contaminated water. The rule for most beta-emitting radionuclides, such as iodine-129, is that concentration in drinking water should not exceed a level that would cause a dose of more than 4 millirem per year to the critical organ. For many or most radionuclides, this would translate into a dose of less than 3 millirem per year whole body dose equivalent (which COGEMA regards as "zero impact"), though that is not uniformly the case.

For instance, consider the case of iodine-129, for which the critical organ is the thyroid. The weighting factor for thyroid is 3%. Thus a dose of 4 millirem per year to the thyroid corresponds to a whole body effective dose of about 0.12 millirem per year. If U.S. drinking water were contaminated with I-129 to a level that would produce a whole body dose of 3 millirem, COGEMA's own level of "zero impact," the corresponding water contamination would exceed allowable levels by a factor of 25. Hence, what for COGEMA would be "zero impact" for I-129 pollution of the water would be in gross violation of U.S. regulations for safe drinking water.

Because European regulations are similar to those in the United States, COGEMA's assertion of "zero impact" for 30 microsieverts radiation dose flies in the face of established regulations both in the European Union as well as in the United States. And while it has not named the experts it relies on, there is evidence that COGEMA has simply used an opinion of a single scientist, who happens to be the chair of the ICRP. To have taken one opinion in the face of a contrary view taken by established regulatory and advisory scientific bodies has means that COGEMA has taken both the

science and regulation of radiation protection into its own hands.)

Leukemia near La Hague, France

A study conducted by Dominique Pobel and Jean-Francois Viel around COGEMA's La Hague reprocessing plant concluded that children and young people who played on beaches near La Hague and ate the local seafood had a higher risk of contracting leukemia. Pobel and Viel's findings were published in the *British Medical Journal* in 1997.[22] Although the authors did not claim to have definitive scientific proof that the leukemia clusters were caused by La Hague's radioactive discharges into the sea, their findings naturally caused concern in the surrounding communities.

Subsequently, the Health and Environment minister of France set up a task force named the Radioecology Group of the Nord-Cotentin Region to investigate these findings. The task force conducted its own study and concluded that the impact of the reprocessing plant on the number of leukemias was negligible.[23] COGEMA has used this conclusion to adopt its policy of zero impact on the environment in saying that:

> All of the epidemiological and radiological studies performed to date, and particularly the recent work by the Radioecology Group of the Nord-Cotentin Region [...], have detected no significant impact on public health and safety from these releases.[24]

However, another recent study, published in the July 2001 issue of the *Journal of Epidemiology and Community Health* has also found an increase in childhood leukemia around La Hague. The researchers concluded:

> This study indicates an increased incidence of leukaemia in the area situated at less than 10 km from the plant. Monitoring and further investigations should be targeted at acute lymphoblastic leukaemia occurring during the childhood incidence peak (before 10 years) in children living near the La Hague site and maybe other nuclear reprocessing plants.[25]

One of the researchers, Alfred Spira of the French Medical Research Institute, was chosen in mid-1997 by the Ministers of Health and Environment to monitor the incidence of leukemia around La Hague.[26]

The difficulties of definitive statistical evidence regarding relatively rare diseases in small populations are well known. But while there may be uncertainties in the interpretation of the data, it is, we believe, improper for COGEMA to categorically rule out causation. COGEMA's flat denial that its discharges might be responsible,[27] even thought there is some evidence for this (admittedly not definitive) effectively puts the burden of proof on the victim instead of the perpetrator of the pollution. In effect it puts the prerogatives of the polluter above the responsibilities of corporations to the

communities in which they are located.

Storage of foreign nuclear waste in France

Article 3 of the 1991 French law on the management of nuclear waste specifically deals with the management of foreign nuclear waste.[28] Under the law, it is illegal to store nuclear wastes of foreign origin on French soil beyond a certain period once these wastes have been reprocessed. Implicit in this language is that the storage of imported nuclear spent fuel is illegal if reprocessing is not intended or if the authorization to reprocess has not been sought or issued. A number of lawsuits and objections have been made that contend that COGEMA is in violation of the spirit and the content of the law by accepting spent fuel without proper reprocessing contracts and through its slowness in returning nuclear waste.

Three lawsuits have been brought against COGEMA:

CRILAN/Anger versus COGEMA regarding the storage of foreign nuclear wastes[29]

A lawsuit filed on December 31, 1993 by a non-governmental organization in Normandy, CRILAN (Comité de Réflexion, d'Information, et de Lutte Anti-Nucléaire or the Committee for Reflection, Information, and Anti-Nuclear Struggle), alleges that COGEMA is violating Article 3 at its La Hague reprocessing plant. The complaint was amended in 1997 to include a charge of endangerment of public safety, since a law passed the previous year allowed individuals to file suit if they believed their safety was being endangered due to illegal activities.[30] Didier Anger, who represents CRILAN and is also a former member of the European Union Parliament, is the plaintiff for the amended charge. The activities alleged to cause public endangerment were nuclear waste storage on the site in general and, specifically, the illegal storage of foreign nuclear waste. The judge in charge of the case, Frederic Chevallier searched COGEMA's headquarters near Paris in September 1999 and seized the contracts between COGEMA and its foreign clients. He conducted the search because COGEMA had delayed handing over the documents he had requested.[31] The examination of the contents of these contracts clarified the agreements regarding the repatriation of the processed wastes.[32]

Even before the examination of the contracts, Christian Bataille, a member of the French parliament and the author of the waste law had said: "I take my hat off to this young judge who has the guts to insist that the law should be obeyed. At that time [the passage of the law] all sorts of pressures were put on me so that Article 3 would not be voted on. It interferes with many commercial contracts and COGEMA is a business enterprise. Today its enforcement [Article 3] comes into conflict with a technocratic structure that considers itself above the law."[33]

The very first contracts signed in 1976 between COGEMA and its German and Belgian clients stipulated that the plutonium and the uranium would be returned to them but the rest of the waste would be the property of COGEMA.[34] According to

Anne Lauvergeon, the President of COGEMA, the next contracts signed in the 1980sstipulated that the high-level radioactive waste was to be sent back to the countries of origin.[35] However, in a newspaper interview, Didier Anger said that the documents found by the judge show that the contracts signed in the 1980s contained loopholes on the question of the return of the wastes:

> . . . some contracts contained the option to return [the wastes] or the option [for the country of origin] to be fined if the returns did not happen. Moreover, even after the 1991 law, decisions were taken by COGEMA that postponed waste return[36]

Since 1995 a few small waste return shipments have taken place: one to Switzerland, three to Belgium, four to Germany and seven to Japan.[37]

Subsequently, two more lawsuits have been introduced against COGEMA pertaining to the import of nuclear waste:

Greenpeace versus COGEMA regarding the shipment of Australian reactor spent fuel[38]

On March 15, 2001 a French court forbade the unloading of a ship carrying irradiated highly enriched uranium (HEU) reactor fuel from the Lucas Heights research reactor in Australia, destined for COGEMA's reprocessing facility at La Hague. In order to process this fuel, COGEMA was required to have special authorization from the DSIN (Direction de la Sûreté des Installations Nucléaires), France's Nuclear Safety Authority, the nearest equivalent of the U.S. NRC. Greenpeace, which filed suit against COGEMA before the ship docked at Cherbourg, first brought attention to this issue.

The Cherbourg court found in favor of Greenpeace, ordering COGEMA to pay all court costs and threatening large fines for any fuel rods illegally unloaded. COGEMA took the case to the appeals court at Caen arguing that the authorizations for transporting, receiving and stocking the irradiated fuel had been given. As a result, the initial order was stayed in early April. Greenpeace has reintroduced the suit before the Cherbourg court asking it to rule on the merit of the case: whether COGEMA can import nuclear material without the authorization to reprocess. COGEMA claims that the Cherbourg court is not competent to judge the case and has appealed to another tribunal to rule on the competence of the court.[39]

CRILAN versus COGEMA regarding the shipment of non-irradiated scrap MOX fuel[40]

In March 2001 CRILAN took COGEMA to court for accepting four shipments at La Hague of German non-irradiated MOX fuel scraps from the Hanau MOX fuel fabrication plant that is being dismantled. The shipments arrived during the summer of 2000. These scraps are slated to be reprocessed. However, COGEMA must have a

special authorization from the DSIN to reprocess it, but it has not applied for such authorization. Furthermore, these shipments occurred without the knowledge of the French Ministry of Environment and in spite of the fact that for the last two years the French government has declared that no more imports of spent fuel from Germany would be accepted until Germany takes back its wastes from La Hague. The Ministry of Industry claims that the shipments were legal since the fuel is not irradiated and the contract was signed in 1997, before the 1998 ban on transports from Germany to France.[41]

The court ruled that CRILAN did not have the standing to bring this case to court. Another organization, Manche-Nature, has reintroduced the case in court arguing, as does Greenpeace, that this MOX material should have the status of waste and is therefore illegally stored at La Hague. As in the case with the Australian reactor fuel, COGEMA has appealed to another tribunal to rule on the competence of the Cherbourg court.

The legality of the storage of these special fuels was examined in a report authored by Christian Bataille. . In the report, Mr. Bataille acknowledged that the section of the law dealing with foreign fuel, while clear on the subject of the status of nuclear waste after reprocessing, is not precise enough in addressing the fate of the nuclear material before reprocessing. However, the report also stated:

> At the time [of the enactment of the law] what the legislator [Bataille] wanted was very clear: the continuation of the reprocessing activities, while at the same time preventing the La Hague plant from becoming the 'nuclear dump' of Europe . . . The contracts passed with the foreign utilities are for reprocessing and reprocessing only. COGEMA has no business in offering storage services, even if some countries are obviously ready to pay in order to get rid of a problem that they do not know how or want to solve.[42]

He adds that these fuels could very well have stayed in their country of origin until COGEMA was legally and technically able to proceed with reprocessing.

Close to 50 metric tons of German MOX spent fuel resulting from the irradiation of mixed plutonium dioxide-uranium dioxide fuel in German reactors and shipped between 1988 and 1998, is believed to be illegally stored at La Hague.[43]

Since this spent fuel does not have a permit to reprocess it, and since it contains far more plutonium and other transuranic radionuclides than spent uranium fuel, it is being stored in violation of the spirit of the 1991 waste law, according to the parliamentarian who is its author. When asked about this issue in an interview with France's daily newspaper, *Le Monde*, the parliamentarian Bataille said:

> The [1991] law allows storage of wastes after reprocessing only for the time needed to cool the wastes. It did not foresee storage of un-

> reprocessed spent fuel for an extended period, awaiting reprocessing. This practice is contrary to the spirit of the law. Storage of wastes not intended for commercial reprocessing is not allowed. As the author of the law, I declare that the spirit of the law is being flouted by this practice.[44]

Principal Findings and Recommendations

Our principal finding is that the record of COGEMA in its home country France warrants careful investigation before any assumption can be made that its U.S. subsidiary will scrupulously abide by U.S. laws and radiation protection regulations. COGEMA has had several brushes with the law and faces lawsuits in France regarding its nuclear waste storage practices at its main reprocessing plant at La Hague.

The most troubling issue for the operations of its U.S. subsidiary is that the parent company COGEMA has decided to arrogate the authority to decide that there is a threshold of radiation dose, 3 millirem, that can be considered as a "zero impact" dose. This flies in the face of all accepted official conclusions on which prevailing health and environmental regulations are based. While there continue to be uncertainties and debate on radiation risk, all official bodies, including those that have recently reviewed the risks of radiation exposure, have concluded that the best hypothesis is that there is no threshold below which there is no risk. Moreover, COGEMA's suggested threshold of 3 millirem whole body dose would in some cases violate U.S. regulations. In the case of iodine-129, for instance, the implied contamination of drinking water at 3 millirem whole body equivalent exposure is 25 times the allowable safe drinking water limit.

COGEMA's rejection of the very basis of U.S. radiation protection regulations and the science that underlies it, is a major challenge to the integrity of U.S. radiation protection regulations. We recommend that the DOE, NRC, and U.S. Environmental Protection Agency (EPA) require that COGEMA, Inc., the U.S. subsidiary of COGEMA, explicitly and formally assures the NRC , the EPA, and the DOE that it adheres to the no-threshold hypothesis and, as a corporation bound to obey U.S. laws and regulations, accepts the science underlying the no-threshold hypothesis for radiation risk so long as this forms the basis for U.S. regulations.

Our second recommendation is that the NRC, EPA, and DOE should jointly conduct a thorough investigation of the home country record of COGEMA regarding its compliance with waste storage laws, European regulations, and the environmental concerns of its neighbors. . Public input should be sought in such an investigation in France, in other European countries, and in the United States. The results of that investigation should be public.

Finally, we recommend that until these two conditions have been met, COGEMA, Inc. should not be allowed to process weapons-usable materials in the United States or to continue to be a part of the design consortium for the MOX plant or any of the

associated facilities.

Endnotes

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[27] A COGEMA summary of its "Impact Study" of January 2000 states that "The strict respect of these discharges authorisations by the nuclear operators provides a guarantee that the activity is free of sanitary consequences for the public and the environment." It makes this claim even though COGEMA calculates the maximum dose from its La Hague operations currently at less than 6 millirem (0.06 millisieverts), i.e. above its definition of "zero impact" and acknowledges that past doses were higher. On the web at http://www.cogemalahague.fr/LaHague/InstitutionUK.nsf/Dossier/EtudeImpactUK?OpenDocument
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