

PELINDABA WORKING GROUP

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ACER (Africa) Environmental Management Consultants
MTUNZINI
Attn: Ms Bongji Shinga

Dear Ms Shinga, Murie and Mottram

RE: COMMENT ON REVISED PLAN OF SCOPING STUDY FOR NUCLEAR-1, NUCLEAR-2- AND NUCLEAR-3 – FORMERLY KNOWN AS ESKOM PWR NUCLEAR POWER STATION AND ASSOCIATED INFRASTRUCTURE

PLEASE NOTE: We specifically request that all documentation submitted herewith be included documentation submitted to the relevant authorities in full, both in hard copy as well as electronically. We also specifically request that documents listed below & submitted to the consultants on the PBMR Draft EIR in November 2008 be considered part of this submission as well as the extensive list of “Resources” below.

New annexures herewith submitted include:

NEW DOCUMENTATION HEREWITH PROVIDED INCLUDE:

1. Toxic link – The WHO and the IAEA, Oliver Tickell
- 2-1. HEPA Filters Dossier_PWG
- 2-2. ANNEXURE A_Fulk Declaration (1)
- 2-3. ANNEXURE B_Fulk Declaration (2)
- 2-4. ANNEXURE K_Survey of Mixed-waste Hepa filters in the DOE complex 2002
- 2-5. Recent discourse with ICRP, 2009
3. Routine radioactive releases from nuke reactors, NIRS
5. Epitaph for the Atom: The Catastrophic Economics of Nuclear Power
6. The High Cost of Nuclear Power – WISPIRG 2009
7. Nuclear's hidden subsidies – David Lowry May 2007
8. 16 Dirty secrets about nuclear power – Russell D. Hoffman 2007
9. Physicians Letter_May 2009
10. AREVA exposed – Linda Gunter AlterNet_March 2009
11. Millions of dollars spent lobbying for nuclear power – Mike Stuckey
12. The Hoax of Eco-Friendly Nuclear Energy – Karl Grossman 2008

DOCUMENTS – PREVIOUSLY PROVIDED

1. Enviro PC_NUCLEAR ENERGY HEARINGS_ PMG minutes_June07
2. Low level ionising radiation effects on human life_Dr Alice Stewart
3. Mariette Liefferink_SUBMISSION ON WASTE MANAGEMENT BILL_NCOP_2008
4. New nukes to cost at top end of \$4-bil to \$10-bil range_analyst_Platts 2008
5. Nuclear Emissions_Helen Caldicott
6. Nuclear Fact Sheet - reachingcriticalwill
7. PWG_submission Enviro PC nuclear energy hearings_June 2007
8. UK Nuclear clean-up costs 70 billion pounds - SA none! June 2007
9. Uranium - Known Facts & Hidden Dangers
10. Uranium - the deadliest metal_Dr Gordon Edwards
11. Uranium mining in SA - the Dominion case 2008
12. Wind power could produce 12 percent of the world
13. World Uranium Hearings_SA workers' testimony

Herewith please accept our comments on the Revised Plan of Scoping Study:

1. Call for rejection or suspension of this EIA process

We expect the consultants and applicants to justify continuation on this EIA process in light of there being no indication whatsoever of what type of nuclear power station is to be built or presented for consideration. Thus no known parameters can be assessed and it is therefore ludicrous to base parameters on the aging Koeberg station now 25 years in production with spurious public information on the historic environmental and human risks and hazards which have yet to be independently verified or assessed.

2. Precautionary principle & zero waste policy

South African environmental laws embodies in the NEMA, the Constitution among others and not excluding nuclear-related law, embodies the both the “precautionary principle” and “polluter-pays-principle”. These principles have wide countrywide and global support especially among social and environmental justice movements. Moreover, the ANC’s most recent Polokwane policies adopted a “zero waste policy”.

These principles must therefore be examined in terms of all specialist studies in this EIA.

3. The DEAT’s agreement with the NNR & therefore other government departments also

3.1 DEAT & NNR:

The DEAT made clear that in terms of a recent agreement between the DEAT and National Nuclear Regulator (NNR) it is the NNR that will deal with nuclear licensing issues (nuclear safety, radiation and radiology matters) in the EIA – an issue of grave concern because the NNR has not demonstrated to the public that it has acted impartially in terms of radiotoxic contamination (Wonderfontein spruit issue) & continues to act in denial that radioactivity presents any real risk to the public. The NNR continues to act as a co-opted (not impartial) wing of the nuclear industry failing to address environmental issues and public concern; and moreover it has an acknowledged lack of skill to do so. And we fear the NNR will fudge the truth on environmental issues as it does not objectively assess the hazards of nuclear energy but works within the faulty and much challenged parameters set by the nuclear industry itself.

The implication of this arrangement as outlined in your documentation is that radiological impacts - the most serious of all - will be left to the NNR licensing process. All documentation offered by the NNR in nuclear-related EIAs in which your company is involved, have been less than forthcoming on complete and convincing information from the NNR.

It is therefore incumbent upon the consultants to ensure that the NNR is asked to wade through ALL the submissions on this EIA to date from I&APs and respond to all questions related to radiological impact in a manner that is understandable and thorough, and takes into account internationally documented information that is not necessarily favourable to the nuclear industry. (Suggestions in this regard have already been forwarded to your company in earlier submissions for this EIA).

We request a complete and thorough understanding of exactly what implications the agreement between the DEAT and the NNR will be regarding monitoring / management / reporting on the environmental impact of the proposed nuclear stations in terms of legal frameworks, the public right to information, the public right to appeal and recourse, accountability, transparency, social & environmental justice. Furthermore, the historic track record review of the NNR needs to be studied independently in this EIA to present the

Environment Department with a clear understanding of where the pitfalls of its agreement with the NNR lie and where the DEAT will find it necessary to be extra vigilant to prevent the NNR from failing in its environmental and human health duties. This must also take into account civil society perception of how the NNR has handled the issues of radio-toxic contamination of the Wonderfonteinspruit Water Catchment - and over 50 other areas in South Africa that are hazardously contaminated by radioactivity - as per the NNR's own reports to Parliament. Status reports plus an objective prognosis on whether the NNR is likely to ever fulfill its legislated mandate to protect workers, persons, property and the environment must be undertaken. (Please see insert below).

The **DEAT-NNR Co-operative Governance Agreement of Aug 2007** is of great concern. DEAT is urged to independently assess where possible any and all assertions by the NNR which has failed in every respect to fulfill its mandate to "protect people and property" and be accountable, transparent and independent. To this end, it is believed that recommendations may be necessary to involve credible civil society involvement in terms of this Agreement – as per the Act with respect to the NNR Board as a minimum. As is discussed in this comment document and in attachments, civil society has come to distrust the NNR as well as the guiding principles the NNR bases its standards on.

Similarly, the liberal use in the EIA documentation and NNR philosophy of the term "**internationally acceptable standards**" also presents a serious flaw if the NEMA precautionary principle is to be applied. Many of these standards are widely disputed and set by organisations known to merely prop up the nuclear-industry such as the **International Atomic Energy Association (IAEA)** and the **International Committee for Radiation Protection (ICRP)**¹. Indeed European NGOs and volunteers have maintained a 24-hour protest presence in front of the **World Health Organisation (WHO)** building in Geneva since April 2007 because "One million children in the area around Chernobyl are contaminated, ill and ignored by WHO" yet the IAEA has, in terms of a 1959 Agreement, subordinated the WHO in research on radiation and health. Furthermore the IAEA works hand in glove with the ICRP to set standards which continue to be widely disputed. At a recent conference of the NNR and ICRP in South Africa, it was clear these organisations bat on the same side in the openly stated belief that certain casualties (deaths) caused by the nuclear industry are warranted in terms of the common good for the furtherance of the nuclear industry.

The consultants have in other documentation cited the values and virtues of "**International Council for Radiation Protection**" (ICRP). Yet there exists an official report (now no longer on the internet) in which the ICRP is on record as condoning the possible deaths of 6 million people globally as a possible but necessary casualty of nuclear developments globally.

This cannot be deemed satisfactory.

Provided with this comment document is a recent discourse, in April 2009, between leading nuclear health specialist Dr Chris Busby, Scientific Secretary of the European Committee on Radiation Risk (ECRR) and Dr Jack Valentin, Scientific Secretary Emeritus of the ICRP. It led to a ECRR declaration available at: <http://www.euradcom.org/2009/declarationredacted.pdf> Known as "The Lesvos Declaration" of 6 May 2009, it asserts that:

- the ICRP risk coefficients are out of date and that these lead to radiation risks being significantly underestimated;

¹ Refer to annexure titled: "Toxic link – The WHO and the IAEA" by Oliver Tickell, guardian.co.uk & the document titled "Recent Discourse with ICRP_2009"

- employing the ICRP risk model to predict the health effects of radiation leads to errors which are at minimum 10-fold while we are aware of studies relating to certain types of exposure that suggests the error is even greater;
- the yield of non-cancer illnesses from radiation exposure, in particular damage to the cardio-vascular, immune, central nervous and reproductive systems, is significant but as yet unquantified;
- urge the responsible authorities and all those responsible for causing exposures, to adopt a generally precautionary approach, and in the absence of another workable and sufficiently precautionary risk model, to apply without undue delay the provisional ECRR 2003 risk model, which more accurately bounds the risks reflected by current observations;
- demand immediate research into the health effects of incorporated radionuclides, particularly by revisiting the many historical epidemiological studies of exposed populations....
- Consider it to be a human right for individuals to know the level of radiation to which they are exposed, and also to be correctly informed as to the potential consequences of that exposure.

The objective of the IAEA is “to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world”. The IAEA is thus judge and jury in relation to the health risks of nuclear activities.

As a result of this Agreement, WHO still claims today, 21 years after the Chernobyl catastrophe, that there have been only 56 victims. Between 600 000 and one million “liquidators” saved Europe by extinguishing the fire and constructing the sarcophagus. Many of these men suffer and die in atrocious circumstances. The same cover up operates in relation to the health effects of depleted uranium 238 in weapons used in Kosovo, Kuwait, Afghanistan and Iraq.

A media flash presentation based on “**The Other Report on Chernobyl**” (the Torch report - compiled by well-respected academics and scientists) shows graphics of, for example, radiation plumes after the Chernobyl disaster and how this has led to health and agricultural impact over months and years, which continue to this day. PLEASE use this link to access this on the web because it is not downloadable.

<http://www.greens-efa-service.org/medialib/media/flash/torch/>

No dose of man-made ionizing radiation is a safe dose, and there are numerous expert reports that back this statement and are widely available. Any negative nuclear related health impacts at any stage of this development is unacceptable risk. It would be of national value if the DEAT were to investigate this issue, along with the Department of Health rather than leave the discretion of the extent the nuclear industry may poison civilians. (Please refer to the resources listed.²

Thus, from a humanitarian and responsible social and environmental perspective, DEAT is urged to consider carefully the value of leaving the NNR’s radiological assessments unchecked while the world squabbles over what is “internationally acceptable”.

² Please see the attached document “Routine releases from nuclear reactors” by NIRS; “Low level ionizing radiation effects on human life” by Dr Alice Stewart provided with previous submission); and resource list below

The **NNR** is widely perceived as not having lived up to its mandate, almost never responds to queries from the public and has failed miserably in terms of preventing, mitigating against the radiotoxic pollution from the mining industry. Reports indicate the NNR has even denied the findings of its own report, the Brenk Report, on the issue and has even told Parliament it cannot cope with the impending nuclear expansionist plan.

It is therefore hoped that in light of DEAT Director-General's statement in the documentation that radiological impacts (the most serious of all) will be left to the NNR licensing process, we request that the consultants take seriously issues raised herein and accordingly ensure that an independent report be included in the Revised Plan of Scoping Study to assess these.

Furthermore, in the report now to be written by the NNR, we also request that it provides an assessment on the faultiness of High-Efficiency Particulate Air (HEPA) filters which are used in nuclear ventilation. In the event of an accident these filters are all that stands between the radioactive materials inside and the surroundings outside of nuclear facilities. HEPA filters are our only hope against environmental contamination and deadly health risks from radioactive emissions. Considered the "best" the world has to offer, again in accordance with "best international standards" new evidence has mounted about the failure of HEPA filters to protect workers, public health and the environment. **Court documents by an expert who is a former Livermore Lab scientist in the US – Marion Fulk - whose career experience is with nuclear filtration issues, in particular HEPA filters, has made 3 expert declarations in the context of a current litigation under the U.S. National Environmental Policy Act for force the U.S. government to further analyse risks caused by HEPA filters.**

The faultiness of HEPA filters was recently raised at the NNR's ICRP/SARPA conference in South Africa and was, predictably, fobbed off. Written questions on the issue to both the NNR and the Nuclear Energy Corporation of SA (NECSA) remain unanswered.

Please find attached documents:

- 2-HEPA Filters Dossier_PWG
- 3-ANNEXURE A_Fulk Declaration (1)
- 4-ANNEXURE B_Fulk Declaration (2)
- 5_ANNEXURE K_Survey of Mixed-waste Hepa filters in the DOE complex 2002

Although this is an unprecedented EIA process because it is for nuclear power stations of which no details about the actual reactor models can be given, it is assumed HEPA filters will be used. It is therefore critical that the NNR assess the documentation already sent to it and also herewith provided in its study report.

The following, therefore INSERT on the NNR, is relevant:

- **The National Nuclear Regulator (NNR) has admitted there are 53 areas dangerously contaminated by radioactivity in South Africa**

But, the NNR said in its last annual report to Parliament, it had “discontinued” proposed rehabilitation of sites in the Karoo that were “contaminated ...with radiological hazard to members of public and to future generations” since the late 1970s and early 1980s because the DME had issued uranium prospecting permits to new companies in that region. The NNR said it was understaffed and overwhelmed by governments proposed nuclear energy plan.

<http://www.pmg.org.za:80/viewminute.php?id=9845>

- **The North West Province’s 2002 “State of the Environment” Report disclosed substantial evidence of radioactivity in the drinking water of communities**

This report found that “there is a growing body of evidence pointing that both the long- and short-term effects of radioactive substances present in the environment may be impacting on the health of the population of the North West Province, particularly in the gold mining areas. Communities that are not currently supplied with safe, treated water and which rely on radionuclide-contaminated surface or ground water resources for their potable water are the most vulnerable to such health risks.”

- **One in 20 mineworkers exposed to excessive levels of radiation - Council for Nuclear Safety**

Around 1999 the Council for Nuclear Safety (CNS) estimated that at least 10,000 mineworkers, or roughly one in 20 mineworkers, had been exposed to radiation levels that exceeded safety limits.

(Business Report Oct 7, 1999). In February 2007 during the NNR submission of its annual budget, its CEO Mr. Magumela stated that in 2002, 7 931 people had been exposed to unacceptably high doses, but this number had declined year by year to 1133, 424, and 8. He said there had been an improvement over the last five years but failed to mention this was as a result of a largely stagnant uranium mining industry at the time.

- **500 former South African nuclear workers no closer to compensation**

The cases of over 500 ex-workers at the National Energy Corporation of SA (NECSA)'s Pelindaba complex who came forward for an Occupational Health Study initiated by Earthlife Africa around 2005 remains unresolved since the company claimed its own “health study” showed there is no basis for the claims. Well over 20 of these people - seriously ill and poor - have now died.

- **Vaalputs communities fear nuclear contamination**

Representatives from Namaqualand communities living near the Vaalputs national nuclear waste facility in the Northern Cape told Parliament's Minerals and Energy portfolio committee this year they feared their water supply was being radioactively contaminated. Community leader Tony Coetzee appealed to Parliament to test the water in their area but the Nuclear Energy Corporation of SA, which manages Vaalputs, rejected these allegations, saying the region's groundwater had not been contaminated by radioactive waste from its facility

http://www.news24.com/News24/Technology/News/0..2-13-1443_2386935.00.html

- **Radioactive waste is piling up at Pelindaba & Koeberg**

Reports indicate that there are alarming statistics of radioactive waste piling up at Pelindaba and Koeberg - where it is also being poured into the Atlantic Ocean. At the Pelindaba complex thousands of litres of radioactive waste has been discharged into the Crocodile River which flows into the Hartbeespoortdam. These practises have continued unabated for decades and continue to this day.

- Additional information on waste management by Mariette Liefferink was supplied to the consultants in the above-mentioned submission on the PBMR EIA.

3.2 Other government departments:

Moreover, other government departments appear to be responsible for other nuclear-related environmental monitoring (eg hazardous chemical substances) which are often ignored environmental damagers from the nuclear industry. Thus all pass the buck. It is therefore now also imperative that a study in this EIA produces a study document that outlines and examines the chain of accountability for monitoring all aspects of the proposed nuclear stations by all other government departments as the DEAT clearly is backing off from a holistic approach.

An overview must be supplied in terms of which it is made clear which other government departments will be accounted to and accountable for other aspects relating to the nuclear power plants, and what mechanisms they provide the general public and affected communities for a free flow of relevant information, queries, investigation requests, complaints etc. This must include contact information on the relevant departments and relevant officials.

4. Peer Reviews

An overview of how the peer reviews will be conducted is vital. Who will appoint them? According to what criteria? If not, why won't international experts suggested by I&APs be consulted as peer reviewers by the consultants? Will civil society / I&APs have a say in the appointment of peer reviewers? This overview must incorporate the regulations that discuss the public's right to insist on peer reviewers of the studies (who are acceptable to civil society & at the cost of the applicants) and the mechanisms (legal requirements) for ensuring that peer reviewers are appointed with acceptability to I&APs. A full understanding of what assistance will / or can be provided by the DEAT in this regard and to what extent the DEAT is willing to consult I&APs on this issue must also be provided. Also pertinent, is the legal recourse and regulations pertaining to the rights to appeal or judicial review or legal actions open to I&APs,

- if reports fail to address issues of concern or
- in terms of I&APs rights to challenge a positive RoD (Record of Decision).

Indeed we respectfully urge the DEAT to consult with leading civil society I&APs in terms of peer review specialists that it may called for by the DEAT.

5. Decommissioning & impact on climate change³

A comprehensive and understandable study on decommissioning must include long-term impacts including costs, management costs and envisaged procedures (including transportation considerations). Models and methods for decommissioning are necessary in order to assess effectively. The impact of decommissioning on climate change and on sustainability issues must be considered.

6. Full Fuel Cycle & impact on climate change

Our previous submissions have discussed this issue in some length but we do not believe the importance of all aspects relating to the full fuel cycle, and its implications for climate change and sustainable development, are not being grasped fully.

³ Please refer to attachment "Nuclear's hidden subsidies"; previously submitted "UK Nuclear clean-up costs 70 billion pounds – SA none!" and resource list below.

The impact of the FULL FUEL CYCLE from cradle to grave (i.e. mining to long-term waste management – thousands of years NOT ONLY FOR THE LIFE CYCLE OF THE POWER STATIONS alone) on both cost and emissions (ALL emissions not only CO2 but we want a full inventory of ALL emissions; also the degree to which weather or seismic patterns might change over the coming 100,000 years and how this will impact on that waste, wetland ecosystem and coastlines.

The **Full Fuel Cycle** of nuclear energy begins with uranium mining – itself a finite source with declining ore-grades. As such the impact on CO2, Green Houses Gasses and other emissions, in terms of the declining ore-grades must also be taken into account. Additionally, the environmental impact of uranium mining – as part of this process – must be taken into account (Please refer to the extensive documentation submitted to your offices in this regard with the PWG comment on the PBMR Draft EIR in November 2008). The consultants have been alerted to in-depth studies and should not ignore them.

Additionally, as nuclear fuel involved uranium enrichment, the environmental impact, costs and contribution to climate change of this process must be included.

7. Alternatives & impact on climate change

A comprehensive study on alternatives such as renewable energy (not nuclear as the documentation keep asserting!) must be undertaken, taking into consideration their environmental performance, costs, job opportunities, waste, sustainability, current developments in the global and local renewable energy industry and life cycle of these alternatives as opposed to the limited number of years that a nuclear reactor can produce energy; and comparatively how these impact on CLIMATE CHANGE considerations in their assessments. A clear indication of the sources used in this regard is necessary and if the comprehensive lists of organizations, experts and NGOs (local and international) provided to the consultants are not used, convincing reasons must be supplied listing all that were not consulted, and why (including Earthlife Africa, SECCP & other NGOs specializing in these issues).

8. No Go option

The specialists' assessment on the No Go option must be thorough, comprehensive and take into consideration ALL reports and comments submitted by I&APs in detail. In addition, in light of the DEAT's statement in the documentation that the impression is created that use of nuclear is open for discussion and should be clarified, the report produced MUST provide guidelines to I&APs on the terms, conditions and mechanisms for challenging a dismissal of the No Go option. In particular, please refer to an extensive study titled "Carbon-Free, Nuclear-Free" Makhijani, Arjun, IEER Press, 2006. Available at www.ieer.org) We wish to enter this work in as a document for consideration, but ask that the consultants download it themselves due to its size.

9. Modeling of studies on Koeberg

DEAT recommendations call for specialist reports to be "modeled" on studies of Koeberg particularly for on site cumulative impacts, exposures, air quality, and human health risks. If only for reasons of exposing the truth about Koeberg, and bearing in mind that in no way can this produce an accurate assessment for the proposed nuclear stations as there is no indication of what type of stations these are to be, should be endorsed and expanded to incorporate the Pelindaba site on each account as it is the other nuclear-related site in South Africa for which environmental information that has been concealed can now be studied in

terms of the extent of radiotoxic contamination (airborne & on ground water resources, wetlands & rivers).

This report must also include information held by operators of both Koeberg and Pelindaba about abnormalities found on- or near-site in fish, reptiles and mammals, and in the case of Pelindaba a clear account of massive bird and otter deaths on the Crocodile River in the 1990s. The unconfirmed reports of abnormalities in sea creatures at Koeberg must also be investigated and reviewed.

10. Marine Biology Report

Environment Minister Buyelwa Sonjica this week announced South Africa is set to market itself as the destination of the Big Seven in an attempt to stimulate tourism and focus attention on marine protection. "Top ocean predators" such as the whale and the shark will accordingly be included in the country's marketing brand.

As requested in earlier submissions, this report must take into account known research in the form of a landmark report *Licensed to Kill* on the impact to marine animals from the routine operation of coastal nuclear reactors. The authors Paul and Linda Gunter are specialists with the organization Beyond Nuclear and can be contacted at Tel: 301.270.2209 / Email: linda@beyondnuclear.org.

Herewith a write-up on this critical research:

Liquidized sea-life

In their report "**Licensed to Kill**", Linda and Paul Gunter describe how **cooling systems used by the nuclear industry suck in more than a billion gallons of water each day. Turtles, seals, sea lions, fish and other sea creatures are sucked along with the water into a huge pipe, shuttled through a barnacle-lined tunnel that slices open the flesh and then while mammals suffocate, smaller fish are liquidised to form a sediment that is pumped back into the sea.**

In South Africa, Eskom has identified potential sites to construct a 4000 MW nuclear reactor including Bantamsklif near Pearly Beach, Brazil near Kleinsee/Port Nolloth, Duynefontein near Koeberg, Schulpfontein near Hondeklipbaai/Kleinsee area and Thyspunt near Cape St Francis. Eskom CEO, Jacob Maroga, said nuclear plants had to be close to large quantities of water and at sea temperature.

Proponents of nuclear power in South Africa have argued that the "advantage" of a nuclear reactor like Koeberg is that it uses sea water to cool its condensers. If a nuclear station were located in Gauteng - it would use fresh water, probably from the Vaal River. A typical 1000 megawatt reactor sucks in more than a billion gallons of water a day. After going through the nuclear station, the heated water is pumped back into water supplies with a caustic chemical added to prevent scale-forming compounds. In this way, the nuclear reactor uses nearby water sources as a "heat sink".

In the United States, 59 reactors are situated near lakes, reservoirs, estuaries, oceans and rivers. Some reactors have **underground tunnels or pipes from the shore to underwater structures anywhere from 1000 feet to 3 miles from the reactor itself.**

Marine life is sucked in through the intake tunnel at speed and trapped against screens, racks, bars and barrier nets. Larger animals drown or suffocate. Smaller fish and other organisms are burnt before being discharged into the water. Others are liquidized by the reactor condenser system and pumped out as sediment. A high destruction rate overtakes recovery rates and so **entire marine communities are destroyed.**

Instead of applying sanctions when a **nuclear plant kills more than its "allowed quota" of an endangered species**, the Nuclear Regulatory Commission (NRC) in the US has been acting on behalf of

the reactor owner to get a larger quota. **A reactor may be given a lethal "take" limit of ten sea turtles a year, but then not admit responsibility for further deaths.**

In 2000, the Diablo Canyon reactor operators were found to have withheld information from environmental regulators for 20 years. In that time, damage to indigenous marine life was disastrous, nearly wiping out black and red abalone. But despite the evidence, the public utility argued that no action was necessary. State regulators instead accepted a cash pay off of about \$4.5 million and allowed the reactor to continue.

Nuclear utilities have made promises they had no intention of keeping once they began operation. Units 2 and 3 at San Onofre Nuclear Generating Station near San Diego California were allowed to go online based on an agreement that they would compensate for environmental damage. When findings showed that San Onofre had caused damage, they instead campaigned to avoid obligations.

Four species of endangered and one threatened species of sea turtle in the US are harmed and killed by nuclear power stations. Loggerhead, green and Kemp's ridley sea turtles are most common, but leatherback and hawksbill sea turtles are also taken. The Pacific leatherback is at most immediate risk of extinction.

Endangered manatees and American crocodiles have also been captured and killed at atomic reactors. A human diver who survived being sucked into a nuclear reactor tunnel at St Lucie in 1989 said the victim endures turbulence, darkness and severe tearing by large, sharp barnacles on the pipe's interior.

Various breeds of diving ducks have drowned at nuclear plants. At the Salem reactors in New Jersey, where the utility was supposed to restore the wetlands, herbicidal sprayings harmed the estuarine environment.

When reactor pipes are blocked, they are flushed out using chlorine or other biocides - which has serious consequences, since chlorines affect the ability of animals to reproduce. **Sometimes, reactors are cleaned out with superheated water or sponge balls. This kills hundreds of fish and the sponge balls can be ingested by marine creatures.**

Sea turtles have developed an unexplained viral disease called fibropapillomatosis (FP) in near epidemic proportions mostly near areas of heavy human use and in warmer, more contaminated near-shore waters. Dolphins in Florida's Indian River near the St Lucie nuclear reactors have developed skin lesions like papillomas.

But while larger sea creatures are easier to notice, the effect of destruction of small sea life will be most devastating and lasting. It is easy to look away from the "small, slimy and ugly" as Wilder, Tegner and Dayton wrote in their report on "Saving Marine Biodiversity", but these are what provide foods for larger creatures and enable a system to sustain itself.

Scientists such as James W. Kirchner and Anne Weil state that: "once ecosystems lose key species, they are not likely to recover their full function and biotic variety in less than about 10 million years".

The nuclear industry spent millions on advertising to portray itself as "environmentally friendly" and beneficial to wildlife. They claimed that: "sea creatures and nuclear plants get along well". When this advertising was challenged by various groups, the Federal Trade Commission agreed that these claims were unsubstantiated.

The nuclear industry is allowed to self-monitor and self-regulate to an unacceptable degree. Inconsistencies of reporting marine animal deaths at reactors, makes it very difficult for wildlife organizations to assess damage to species. The NRC is more of a "lapdog" than a "watchdog" and because of this, the marine environment has paid the price for electricity generated by nuclear reactors. Oceanic experts agree that the health of the world's oceans is in jeopardy, but instead of repairing damage, the nuclear industry takes issues to court, resulting in protracted and costly legal challenges.

Atomic reactors generate far less electricity than coal, natural gas and oil-fired stations, but they have a "disproportionate" impact on water resources. Nuclear reactors are thermally less efficient than fossil-fueled stations. For every watt of electricity generated by an atomic reactor, two watts of heat energy are rejected to the environment.

This task of boiling water by splitting the atom has been compared to "using a chainsaw to cut butter" and "ringing a doorbell with a cannon ball". **Reactors do not discharge heat through a chimney stack into the atmosphere - they discharge it directly into the water. In this way, the nuclear industry has made "clean air" claims, while ignoring marine damage, radioactive pollution and potential for catastrophic accident.**

"Rather than wait for the environment to cry for help, the precautionary principle places the burden on fishermen, oil drillers, industry, farmers whose fields run to rivers or shores, and whomever else would exploit the sea, intentionally or not, to avoid harming this precious resource in the first place". (Wilder, Tegner and Dayton).

The threat from the routine operation of nuclear reactors to the environment is little known by the public and overlooked by regulators and policymakers. This means that depletion of resources by nuclear power harm, not only the creatures themselves, but the ability of humans to survive and prosper.

South Africans need to seriously consider the negative effects of the nuclear industry before it takes hold of their coastal waters, estuaries, rivers and lakes. **Dwindling fish stocks around the world mean a disappearing food resource** and a vanishing tourism and leisure industry. **This is something South Africa cannot afford to lose.**

"Licensed to Kill: how the nuclear power industry destroys marine wildlife and ocean habitat to save money," is co-authored by Linda Gunter of the Safe Energy Communication Council (SECC), Paul Gunter of the Nuclear Information and Resource Service (NIRS), Scott Cullen, Standing for Truth about Radiation (STAR) and Nancy Burton.

For further information, contact:

Safe Energy Communication Council: www.safeenergy.org

Nuclear Information and Resource Service: www.nirs.org

Standing for Truth About Radiation: www.noradiation.org

Humane Society of the United States: www.hsus.org

Submitted by: Ingela Richardson

Additionally, in 2006 the television channel S4C revealed the results of a survey from around Trawsfynydd nuclear power station in Wales in the United Kingdom. A questionnaire was given to nearly a thousand people of all ages around the closed-down power plant. The questionnaire asked about cancer in each household from 1996 – 2005 and showed levels of cancer which ex-Environment Minister Michael Meacher said were "sensational".

A significant proportion of the breast cancer victims said they had sometimes eaten fish from Trawsfynydd Lake, so researchers conducted another survey. Trawsfynydd Lake covers almost 5 square km. It is artificial and has been used as a cooling lagoon during the active life of the power station. The lake-bottom sediment down to 300 mm is contaminated with a concentration of 4¼ million Bequerels per tonne of radioactivity - more than 10 times the concentration which under UK legislation is defined as Low Level Radioactive Waste

requiring control. But the lake is still advertised as a sports amenity for swimming, boating and fishing.

Michael Meacher said the research findings were "a sensational development" and must be subject to a full inquiry. He said true health effects of radioactive discharges should be resolved before any commitment to new nuclear power stations was made.

11. Air Quality Report & impact on climate change

The Air Quality reports must provide all information on the filters the nuclear station intends to use and an in-depth review international debates over their safety and reliability of such filtration. (See annexures on HEPA filters). The Air Quality report must deal with ALL routine emissions associated with nuclear power stations without exception, which are well documented in the literature worldwide, and present not only the risk & standards viewpoint of the nuclear industry but also those of affected communities in legal challenges globally. The Air Quality report must take into consideration full accounts of each of the three sites, including wind direction, wind speeds etc.

Nuclear energy is not mitigation against Green House Gasses, nor is it "stable, reliable and non-polluting". Proof is required of balanced information about the extent of contamination and radiotoxic pollution.

12. Water-borne emissions

All water-borne emissions must be clarified, documented and must provide sufficient objective information on the risks and hazards associated with these emissions.

13. Economic

We wish to endorse the submission of Rod Gurzynski on the economics of Nuclear1-3, submitted to the consultants.

We agree the question should be: is nuclear power the best solution for electricity generation in South Africa out of a range of viable alternatives, going into the future? The EIA study's assertion that "renewable forms of energy are inadequately developed" is not true and therefore in terms of required EIA regulations a strategic assessment is necessary.

This is massive expenditure of public funds on a single technology that is not fail-safe. The capital cost is assumed because Eskom has not revealed the true cost, if they know it at all. (Please refer to attached document titled "The High Cost of Nuclear Power – WISPIRG 2009" in this regard. We also urge the consultants to consult with Earthlife Africa for its recent research in this regard.) Further, decommissioning costs and impacts and the technology of long-term waste management are, according to the study, "too far into the future...and therefore cannot be assessed at present" It is to be hoped that the specialist consultants evaluate all aspects of nuclear power against the viable alternatives at the outset and also do not pull a cover over future costs and impacts of decommissioning.

Additionally, the study must include assessment on:

- Liabilities and insurance policies
- Worker medical insurances
- Public Insurance (medical, loss of property)

- Predictions in terms of current financial turmoil/inflation in world markets
- Payouts likely to be due in terms of possible royalties, ROI to other parties, local and international.
- Impact on cost per unit of electricity.

A **fool proof business case** must be provided. All the assumptions should not be misleading or based on the false premise that, for example, existing US plants are now cost effective - this is a lie. This lie has dominated arguments on nuclear energy from inception. Most evidence points to nuclear-generated electricity worldwide being way more expensive than ever touted or expected. And all industry watchers expect those costs can only rise.

- See link to new research by Rocky Mountain Institute inserted below.
- See **attached** article titled “Epitaph for the Atom - Catastrophic Economics of Nuclear”
- See attached article and link to study titled “The High Cost of Nuclear Power”, WISPIRG, May 2009
- See attached article titled “Nuclear’s hidden subsidies”, May 2009, guardian.co.uk.

14. Waste

New and untested legislation concerning nuclear / radioactive waste now intends for control by a virtually privatised Agency under the DME, thus once again largely removing the environmental control from our officially mandated environmental custodians – the DEAT. It goes further, in that **the polluters (ESKOM, PBMR, or NECSA & whatever foreign business partners they chose) will essentially be able to fob off their liabilities and responsibilities for radioactive waste** on this Agency which in turn could, if it wished, turn this waste into a lucrative business by “reprocessing” it – an intention that has been stated, retracted but is likely to continue regardless.

A thorough evaluation of nuclear waste management, methods, costs and logistics is required.

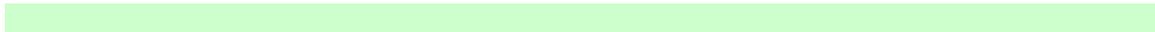
15. Nuclear energy is “one of the world’s safest energy technologies”

The consultants are on record in a letter to the Pelindaba Working Group as asserting that all the literature they’ve reviewed indicates that nuclear energy is one of the world’s safest energy technologies and invited us to send them literature for review which, they say, will be included in their DEIR. Attached to this submission, please find evidence to the contrary. It is requested that these documents be carried in all documentation in their entirety and NOT abridged in as an item in the comment sheets. Furthermore, these documents provide known facts that require answers from the “experts” assigned on this EIA.

Nuclear energy is NOT sustainable, safe, and renewable. It is not clean, green or the answer to global warming. Nuclear waste is CANNOT “recycled” – it is “reprocessed” to produce far more deadly material which in turn has massive implications for nuclear proliferation.

The following is provided in order that I&APs concerns be addressed in assessments in this regard:

A. The Nuclear Illusion:



Please find below the link to a new study titled "the Nuclear Illusion" which takes a recent analytic look at the precarious business case of nuclear energy globally, and certainly puts to doubt the realities behind the much vaunted "nuclear renaissance". It is well worth consideration in the South African context as it also considers the economics of different nuclear options (that are currently vying for tender in SA and it also provides information on the PBMR) and provides economic evidence along with comparatives for competitors. It focuses on issues such as carbon emissions, reliability, energy security, output, and market distortions.

The Nuclear Illusion by prominent environmentalists AMORY B. LOVINS AND IMRAN SHEIKH say in a new paper nuclear power "worsens climate change", because it diverts money away from alternative energy and efficiency efforts that would otherwise reduce greenhouse gas emissions. Adding insult to injury, Lovins also says that nuclear power is "grossly uncompetitive, unneeded and obsolete" and "weakens electric reliability and national security."

http://www.rmi.org/images/PDFs/Energy/E08-01_AmbioNuclIllusion.pdf

- B. "16 dirty secrets about nuclear power" – Attached
- C. Physicians Letter, May 2009. Please note the number and calibre of physicians and organisations that support the view that nuclear power is NOT safe.
- D. AREVA exposed, Linda Gunter, AlterNet, March 2009 – Attached.
- E. Millions of dollars spent lobbying for nuclear power – Attached.
- F. The Hoax of Eco-Friendly Nuclear Energy, Karl Grossman 2008 – Attached.

Given time and data constraints, I ask the consultants to let me know whether, if they are still not convinced that it is a falsity to claim nuclear power is safe, to please contact me for further information which I will gladly supply.

Additional resources are provided below.

Given nuclear power's high costs and its legacy of nuclear waste, expanding the use of nuclear power is not a responsible choice for meeting future electricity needs. We urge you to critically assess the substantive cost issues lest nuclear energy be the alter upon which South Africa bankrupts itself.

Sincerely

Dominique Gilbert
Coordinator

Resources

<http://www.scientificamerican.com/article.cfm?id=will-nuclear-power-reach-critical-mass#comments>

There are problems on every front with nuclear power, besides the cost. Here is some info for those wishing to become enlightened on this:

Authoritative analysis:

- Craig A. Severance, 2008, *Business Risks and Costs of New Nuclear Power*
- <http://climateprogress.org/wp-content/uploads/2009/01/nuclear-costs-2009.pdf>

Historical background:

Ernest J. Sternglass, 1981, *Secret Fallout: Low-Level Radiation from Hiroshima to Three Mile Island*.

Union of Concerned Scientists:

- http://www.ucsusa.org/assets/documents/nuclear_power/nuclear-power-in-a-warming-world.pdf
- http://www.ucsusa.org/nuclear_power/reactor-map/embedded-flash-map.html
- http://www.ucsusa.org/nuclear_power/reactor-map/embedded-flash-map.html

Amory Lovins and the Rocky Mountain Institute:

- <http://tinyurl.com/forgetnuclear>
- <http://www.rmi.org/sitepages/pid467.php>

Lester Brown and the Worldwatch Institute:

- <http://tinyurl.com/brownnuclear>
- <http://www.earthpolicy.org/Updates/2008/Update78.htm>

Public Citizen (from the work of Ralph Nader and Critical Mass):

- http://www.citizen.org/cmep/energy_enviro_nuclear/nuclear_power_plants

- <http://www.citizen.org/documents/FatalFlawsSummary.pdf>
- http://www.citizen.org/cmep/energy_enviro_nuclear/nuclear_power_plants/articles.cfm?ID=13447

Michael Mariotte and NIRS

- <http://www.nirs.org/factsheets/routineradioactivereleases.htm>
- <http://www.nirs.org/factsheets/fctsht.htm/#radiation>
- <http://www.nirs.org/factsheets/tritiumbasicinfo.pdf>

Nuclear waste

- <http://www.indyweek.com/gyrobase/Content?oid=oid%3A393820>

The truth about Three Mile Island

- <http://www.indyweek.com/gyrobase/Content?oid=oid%3A393821>
- *Chernobyl on the Hudson? The Health and Economic Impacts of Terrorist Attack at the Indian Point Nuclear Plant*, Union of Concerned Scientists, 2004. Available at www.ucsusa.org .
- *Dirty Dangerous & Expensive*, Physicians for Social Responsibility, 2009. Available at www.psr.org .
- *Governors Task Force Report on Global Warming*, 2008, available at www.wi.dnr.gov
- **Carbon-Free, Nuclear-Free**, Makhijani, Arjun, IEER Press, 2006. Available at www.ieer.org .
- **Insurmountable Risks: The Dangers of Using Nuclear Power to Combat Global Climate Change**, Smith, Brice, IEER Press & RDR Books, 2006. Available at www.ieer.org .
- *Nuclear Power Is Not the Answer*, Caldicott, Helen, The New Press, 2006. Available at www.thenewpress.com .
- *The Future of Nuclear Power*, MIT, 2003. Available at www.mit.edu .
- *The High Cost of Nuclear Power: Why America Should Choose a Clean Energy Future Over New Nuclear Reactors*, WISPIRG Foundation, available at www.wispirg.org .

- *Unsafe Operations, Wisconsin Reactors often reported and fined*, Nukewatch, 2009. Available at www.nukewatch.com.
- Electricity costs are levelized lifecycle costs including interest and operating expenses in 2007 dollars. Harding, Jim. *Economics of New Reactors and Alternatives*, presented at the Carnegie/NPEC Conference, February 11, 2009. Available at <http://www.carnegieendowment.org/events/?fa=eventDetail&id=1246&prog=zgp&proj=znpp>.
- NPR interview with NEI spokesperson Alex Flint in response to de-funding of Yucca Mtn Federal Waste Repository on March 11, 2009. The NEI website states that \$31 billion has been collected from ratepayers for waste storage. NPR interview available at <http://www.npr.org/templates/story/story.php?storyId=101689489>.
- Keith O. Fultz, "A Perspective on Liability Protection for a Nuclear Plant Accident," Government Accounting Office, GAO/RCED87-124, June 1987, page 40.
- EPA, 40 CFR Part 197, Public Health and Environmental Radiation Standards for Yucca Mountain, Nevada: Final Rule, October 15, 2008. Federal Register / Vol. 73, No. 200.
- MIT, *The Future of Nuclear Power*, 2003, Summary, pp 4-5.
- Standard & Poors, *Special Report, Nuclear Power Overview: Utilities Look again at New Plants – and Risks*, November 3, 2008. Available at <http://www2.standardandpoors.com>.
- Barker, A, Prepared Remarks of NRC Region III, WI Joint Legislative Informational Hearing, March 12, 2009.
- Congressional Budget Office cost estimate of S.14, Energy Policy Act of 2003, <ftp://ftp.cbo.gov/42xx/doc4206/s14.pdf>.
- Direct Testimony and Exhibits of Steven D. Scroggs on behalf of Florida Power & Light in Docket No. 07-0650, dated October 2007; www.tennessean.com/20081209/GREEN02/812090342/1001/RSS6001.
- Andrews A. Spent Nuclear Fuel Storage Locations and Inventory. Congressional Research Service Report for congress, RS22001, Dec. 21, 2004. Available at: <http://ncseonline.org/nle/crsreports/04dec/RS22001.pdf>.

- General Accounting Office (GAO). Low-Level Radioactive Waste: Disposal Availability Adequate in the Short Term, but Oversight Needed to Identify Any Future Shortfalls. GAO Report to the Chairman, Committee on Energy and Natural Resources, US Senate, June 2004. Available at <http://www.gao.gov/new.items/do4604.pdf>.