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# Comments on the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 52

Regarding Davis-Besse Nuclear Power Station

Report number NUREG-1437, Supplement 52, Docket ID NRC-2010-0298

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The following comments are in response to the Draft Generic Environmental Impact Statement (DGEIS), Report number NUREG-1437, Supplement 52, in regards to the Davis-Besse relicensing application, Docket ID NRC-2010-0298.

In reviewing the DGEIS, it is important to keep in mind the central purpose of the NRC, that is "to protect health and safety and minimize danger to life or property." This report fails to do so because it is filled with errors: errors in judgement; errors of omission; and errors of fact. These errors consistently prioritize protecting the profits and investments of FENOC over the health and safety of the public. In fact, events which have occurred and information which has come to light since the original Environmental Impact Statement was submitted, have made it increasingly clear that the only way for the NRC to fulfill its primary mission is to transition from an agency which promotes nuclear power to one which oversees an orderly transition away from nuclear power and towards the safe decommissioning of all nuclear power plants. These new and significant events include: the nuclear disaster in Fukushima, Japan; numerous studies published since the original EIS which show a link between living near a nuclear power plant and increased cancer rates; and increasing demonstrations that non-polluting energy sources such as wind and solar power can reliably replace nuclear power.

## Section One: Errors of Judgement

The clearest demonstration of the NRC's bias towards promoting nuclear power and against protecting the health and safety of the public shows up in this report whenever the agency is required to make a judgement or an estimate. In these cases, the NRC makes judgements and predictions that fly in the face of reality and common sense in order to justify the license renewal. For example, the agency estimates in Appendix F (Section F.2.1) that the frequency of a core damaging accident is once every hundred thousand years. This fanciful estimate comes despite the fact that there have been numerous core damaging accidents within the last fifty years, including Enrico Fermi 1, Three Mile Island, Chernobyl, and the three nuclear meltdowns at Fukushima. A more accurate estimate, based on actual real world experience, is that nuclear plant meltdowns occur approximately once every 10 years.

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Not surprisingly, the factors that led to NRC's incorrect estimate are also wildly wrong. Tornadoes, floods and other external events are estimated to occur, cumulatively, once every 100,000 years. On page F11, the NRC States, "Based on this result, the applicant concluded that these other external hazards would be negligible contributors to overall core damage and did not consider any plant-specific SAMAs for these events." However, Davis-Besse has already been hit by a tornado. On June 24, 1998 the plant was struck by an F2 tornado. Contrary to the estimates of the NRC, this does not mean that we are good for another 100,000 years. Instead, it demonstrates that Davis-Besse is in a location that is uniquely prone to tornadoes. In fact Lake High School, less than 25 miles from Davis-Besse, was destroyed by an F4 tornado on June 5, 2010. The applicant (FENOC), is clearly wrong and it is the responsibility of the NRC to reject incorrect assertions on relicensing applications. Tornadoes are a site specific risk for the Davis-Besse nuclear plant. The questions that need to be answered in regard to this are not "When will DB be hit by another tornado?" but "What happens if Davis-Besse is hit by an F4 tornado, as Lake High School was?"

The containment dome was designed to protect the nuclear core from external attacks such as tornadoes. However, since the EIS was submitted, it has come to light that the containment dome (or "shield building") around the reactor core is full of large cracks. Also the structure has been operating with large voids in the concrete shell. The initial explanation of the cracks was that they occurred during construction as a result of the blizzard of 1978. NRC and FENOC concluded that these cracks were, therefore, stable and posed no threat to the structure. However, in 2013 it was discovered that these cracks are, in fact, growing. This means that the original explanation for their formation is wrong. It also means that the structure is, by definition, unstable. Whether that instability could lead to structural failure requires study before an accurate answer can be given. The original answer, based on estimates and judgements was clearly wrong.

Numerous other tornadoes have touched down in the area surrounding Davis-Besse since its construction. Tornado frequency is influenced by topography. Low, flat areas like the area where DB is located are more prone to tornadoes. Also, the frequency of severe weather events such as tornadoes is predicted to increase as a result of climate change. An estimate based on reality and real world experience suggests that the odds that Davis-Besse could be hit by an F4 or higher tornado during the period it would operate if its licence were renewed are much higher than 1 in 100,000. Oklahoma City, Harvest, Alabama, and Cordell, Kansas have all experienced multiple tornado strikes in the same location.

Similarly, flooding is estimated to occur only once every 100,000 years. But the Davis-Besse site was flooded by a seiche in November of 1972, before the plant was operational. DB is uniquely vulnerable to seiche events because of its location on Lake Erie. While the plant does have some protective measures in place, the size and extent of those measures have been limited by the costs involved, just as the tsunami barriers were at the Fukushima nuclear plants. The NRC's four step process to judge whether or not a risk such as flooding needs to be mitigated starts with an estimation of the risk involved. This estimate has been demonstrated to be incorrect. Therefore all the other steps in the process have also produced incorrect results.

One of those steps, the cost/benefit analysis, prioritizes profitability for FENOC over the public health and safety. If FENOC determines that it costs too much to mitigate or eliminate a risk, they will not do it. However, with the chances of those risks being estimated as miniscule, almost no mitigation can be justified through a cost/benefit analysis. Turbine room flooding, for example, is estimated at once every 10 million years. No mitigation measures could be justified for something that happens so rarely. However, the Fort Calhoun nuclear plant experienced turbine room flooding in July of 2011. Clearly, it happens more frequently than once every 10 million years.

Loss of offsite power is also estimated at twice every hundred thousand years. In April of 2013, snipers systematically destroyed a power substation near San Jose, California. It took almost a month to restore the station's function. The power grid, and its vulnerable points such as substations are a potential target for a variety of potential aggressors. Terrorists, criminals, or agents of hostile governments could all attack vital parts of the grid system, causing prolonged loss of outside power. A study published in the May, 2014 issue of Ecological Economics, entitled "Human and nature dynamics (HANDY): Modeling inequality and use of resources in the collapse or sustainability of societies" suggests that we are most likely entering a period of societal instability. This instability could create multiple scenarios that would lead to long term disruption of off site power, from severe weather events, to wars, to civil unrest. There have also been many local examples of prolonged power outages. The estimate of twice every hundred thousand years is clearly wrong. All the estimates of "initiating events" in Section 5 that could lead to a core meltdown are similarly, demonstrably wrong.

Another area of a serious error of judgement has to do with the leakage of tritium into the groundwater around Davis-Besse in the 2007-2010 time period. In Section 2, it states, "1 ERM (2008) provided a plausible explanation regarding tritium release and migration." However, the "explanation" is simply a list of possible tritium sources, "potential inadvertent releases from the power block, including the spent fuel pool, would 3 migrate vertically down through the unsaturated zone to the water table. Potential releases from 4 structures below ground could release tritium directly to the upper or lower dolomite unit." 5 Potential tritium sources in the power block are the reactor containment, auxiliary building, 6 circulating water pump house, turbine building, and borated water storage tank (ERM 2007), 7 (ERM 2008). In addition, several spent fuel pool leaks have been documented 8 (Davis-Besse Undated). " These sources would all produce leaks of varying amounts, degrees of radioactivity, and seriousness in terms of compromising the safety of the plant. Before allowing the plant to be relicensed, the NRC must require FENOC to demonstrate a causal link between an accidental release of radiation and tritium entering the ground water. As long as the source of tritium and the cause of the leaks are unknown, there is a very real danger that another, more serious release of radiation will occur. As was demonstrated with the NRC's response to the cracks in the containment dome, simply accepting a "plausible explanation" from FENOC is not a high enough standard of oversight to protect the public health and safety.

## **Section Two: Errors of Omission**

The recommendation that the adverse environmental impacts of license renewal for Davis-Besse are not great enough to deny the license renewal is dependent on the omission of essential information from the NRC staff's consideration.

In the initial public comment on the license renewal application, many people pointed out that nuclear power plants release radioactive isotopes which are known to cause cancer. There is a cancer cluster downwind of the power plant. This supports the conclusion is that radiation from Davis-Besse is causing the cancers. However, the NRC staff response to this assertion on page A-24 was that, "In summary, there are no studies to date that are accepted by the nation's leading scientific authorities that indicate a causative relationship between radiation dose from nuclear power facilities and cancer in the general public." To support this, they cite six studies done between 1979 and 2001. However, they have omitted many studies published in respected scientific journals which have been published since then which DO show a link between living near a nuclear power plant and doubling of cancer rates. This is not too surprising, since cancers caused by radiation can take up to 20 years to appear. Therefore, studies done when nuclear plants are only 10 or 15 years old would mask the long term effects of exposure to low level radiation.

Two of the most widely accepted studies that the NRC omitted were done in Europe and have contributed to the decision of the French government to cut back on the use of nuclear power, and the decision by the German government to eliminate nuclear power from its energy mix completely. Leading scientific authorities in those countries are able to make the seemingly common sense connection between the release of radioactive isotopes into the environment and the subsequent development of cancer. The 2008 German study, "Kinderkrebs in der Umgebung Von Kern Kraftwerken" describes a 60% increase in solid cancers and a 120% increase in leukemia amongst people living near nuclear power plants. The French study, "Childhood Leukemia Around French Nuclear Power Plants" documents a doubling of leukemia rates. This means that for each child with leukemia near a French nuclear plant, there is a 50/50 chance that their cancer was caused by emissions from that plant.

There have been many other studies, as well. A study entitled, "Childhood Cancer Near Nuclear Installations," by Ian Fairle published in the Journal of Environmental Science and Health on 3/1/10, Volume 21, Issue 2, also shows an increase in cancer. There was a study done for the European Parliament that estimated more than 1,000,000 people have died prematurely from the radiation released by the Chernobyl disaster.

It is important to note that finding a fully "causative" link between nuclear plant emissions and increased cancer rates is not only almost impossible, such a study would be immoral and unethical. To demonstrate true causation, one would have to follow a radioactive particle as it left Davis-Besse, entered the environment, was consumed or absorbed by an individual, emitted ionizing radiation inside that person's tissues, and monitored the subsequent cellular damage and cancer development. If a researcher had the ability to do this, they would also be morally compelled to step in and prevent the victim from developing cancer in the first place. Instead, studies must rely on inductive reasoning, that is demonstrating that the number of cancers increase in the vicinity of nuclear plants in enough instances to make the conclusion that

the nuclear plants are causing the increase a reasonable one. This conclusion can be bolstered by demonstrating an increase in rare cancers which are known to be caused by specific radioactive isotopes that are released by nuclear plants, such as thyroid cancers and radioactive iodine. However, many radioactive isotopes, such as tritium, have unpredictable impacts which can affect many different organs.

Finally, the works of Dr. Joseph Mangano, J.M. Gould and their many collaborators can not simply be dismissed out of hand. One of Dr. Mangno's most recent studies, "Infant Death and Childhood Cancer Reductions after Nuclear Plant Closings in the United States," with J.M. Gould, J.J. Mangano, W. McDonnell, J. D. Sherman and J. Brown , Archives of Environmental Health, 57, 23 - 31, 2002. Comes as close as ethically possible to establishing a causative link between nuclear plants and infant mortality. He found that, when nuclear plants were forced to have prolonged shut downs, infant mortality rates dropped. When the shut downs ended and the plants again began releasing radiation into the environment, the mortality rates again went up. Children and women are more vulnerable to radiation than men. A fact which the NRC does not seem to take into account in this report. This is explainable because dividing cells are the most sensitive to damage from radiation, and infants have extremely rapidly dividing cells. Older men, in comparison have cells which divide much less frequently. Dr. Mangano has many other studies which are included in these comments as Appendix A.

In addition to impacts on humans, essential information on the impact on the flora and fauna of the study area has been omitted. There is extensive description and quantification of the birds in the area, for example, and a very brief mention is made of ways that birds could be impacted by Davis-Besse's cooling towers is listed, but a detailed discussion of the severity of that impact is omitted. A 2009 study done by Benjamin K. Sovacool entitled, "Contextualizing avian mortality: A preliminary appraisal of bird and bat fatalities from wind power, fossil-fuel, and nuclear electricity" presented to the Energy Governance Program, Centre on Asia and Globalisation, Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore 259772, Singapore and found online at : <http://www.nukefree.org/news/avianmortalityfromwindpower,fossil-fuel,andnuclearelectricity> suggests that Davis Besse could be killing 3,000 to 5,000 birds every year. Thus, avian impacts should be reclassified as LARGE.

Also, one of the contentions made by commenters on the original Environmental Impact Statement was that the heating of Lake Erie by Davis Besse's effluent would encourage the growth of cyanobacteria such as *Microcystis aeruginosa* and *Lyngbya wollei*. The NRC's response was, "Current operation of Davis-Besse has not been linked to the presence or growth of the cyanobacteria in Lake Erie." However, simply because no researcher has made the link, does not mean that the link does not exist. Several facts are known. Algae grows more quickly in warmer water. I have personally observed large mats of algae that have washed up onshore downstream from Davis-Besse. Probably, DB's discharges are encouraging more algal growth.

In Section 4.1 LAND USE it was stated, " The review included a data gathering site visit to Davis-Besse. No new and significant information was identified during this review that would change the conclusions presented in the GEIS. " Given the NRC staff's poor judgement in other

matters, the report from this visit should have included ANY new information found, so that the public could make a judgement as to what constituted "significant information." This study is supposed to be addressing the impacts of operation after renewal, but it seems in Section 4.2 they only address air quality during the revisions, not after. Section 4.5.2 discusses releases of radiation into local groundwater. It describes "unknown, uncontrolled, and unmonitored releases" of radioactive substances that have occurred in the past, but claims that such leaks are not expected to occur again. Therefore the impact is listed as "small" but in reality it could be much more significant. If the causes of radioactive releases are "unknown" and "uncontrolled," no accurate estimates of their future impacts can be made. In section 4.11 Environmental Justice the report states, "...During 2010, analyses performed on samples of environmental media showed no significant or measurable radiological impact above background levels from site operations (FENOC 2011)." The NRC omitted what it considers "significant." Section 4.4.1 claims that there will be no significant change in surface water use and water quality. However, if projections by the EPA and other agencies are correct, and Lake Erie will warm and shrink as a result of climate change, then there will almost certainly be altered impacts on issues such as thermal stratification of lakes and eutrophication.

### **Section Three: Errors of Fact**

There are many errors of fact in this document, but the most important is the NRC staff's assertion that the power generated by Davis-Besse cannot be replaced by clean sources of electrical generation such as wind and solar. This is one of the Contentions raised by the Intervenor (The Green Party of Ohio, Beyond Nuclear, the Citizens Environment Alliance of Southwestern Ontario, and Don't Waste Michigan) in opposition to the initial application of FENOC for a license renewal. The Intervenor presented testimony and research demonstrating that wind and solar power, with or without energy storage technologies could reliably replace the power generated by Davis-Besse. The Atomic Safety Licensing Board (ASLB) reviewed the evidence supplied by the Intervenor and agreed to hear their contentions. The Nuclear Regulatory Commissioners then took the unprecedented step of overruling the ASLB and throwing out the Intervenor's contention. The Commissioners based this action on the "pragmatic" belief that neither wind nor solar nor any storage technology will be sufficiently advanced to replace DB in 2017, when its license expires, almost exactly three years from now.

The Commissioners and the NRC Staff are wrong, and their error is being clearly and decisively demonstrated in Denmark. In 2013, wind power alone provided 33.2% of that country's electricity demand. With an installed capacity of almost 5,000 MW, Denmark has successfully integrated wind power, despite its intermittency, by having wind farms that cover a wide area, and the ability to export power to neighboring countries when it is producing excess. In fact, during a wind storm in December, 2013, the nation of Denmark met more than 100% of its needs from wind power alone, and exported the excess to neighboring countries. Denmark has had to upgrade its grid, in order to shift loads and demands quickly and efficiently. Our country is capable of making the same improvements. There is no technical reason FENOC could not do the same as Denmark.

Germany has followed Denmark's lead and is using wind and solar power to completely phase out its nuclear fleet. That nation is now getting 25% of its power from renewables, with wind power generating more than 47 TWh of power in 2013. Other European countries such as Spain and Portugal are also increasing the percentage of power they receive from renewables. Since the wind power is being installed continent-wide, intermittency is not a problem with the grid since the wind is always blowing someplace.

Here in the U.S., a recent study by PJM Interconnect and GE concludes that wind and solar can easily satisfy up to 30% of the needs of the PJM Interconnect. The Ohio Power Siting Board has just announced approval of a 300 MW Scioto Ridge wind project. This is in addition to a 305 MW wind farm installed in Van Wert County in 2012. The fact that it is possible to install sufficient wind and solar in Ohio to offset the closure of Davis Besse is being demonstrated by the fact that it is being done without FENOC's cooperation or benefit. It should also be noted that, with a lifetime generation uptime of only about 60%, Davis-Besse itself has to be considered an intermittent power source. Instead of investing in wind and solar, FENOC has invested \$600 million to refurbish steam tube generators at DB. Utility scale wind turbines can be installed in less than a month. Once operational, they are fully automated and require only annual maintenance. Had the response to the Intervenors' contention been to invest in wind and solar, FENOC would be well on the way to replacing nuclear power with wind and solar. It is still possible to replace Davis Besse's output by April 22, 2017, and it may be replaced by other party's whether FENOC chooses to participate or not.

## **Appendix A.**

### **Studies suggesting a causative link between living near nuclear power plants and adverse health effects such as cancer.**

It is important to note that finding a fully "causative" link between nuclear plant emissions and increased cancer rates is not only almost impossible, such a study would be immoral and unethical. To demonstrate true causation, one would have to follow a radioactive particle as it left Davis-Besse, entered the environment, was consumed or absorbed by an individual, emitted ionizing radiation inside that person's tissues, and monitored the subsequent cellular damage and cancer development. If a researcher had the ability to do this, they would also be morally compelled to step in and prevent the victim from developing cancer in the first place. Instead, studies must rely on inductive reasoning, that is demonstrating that the number of cancers increase in the vicinity of nuclear plants in enough instances to make the conclusion that the nuclear plants are causing the increase a reasonable one. This conclusion can be bolstered by demonstrating an increase in rare cancers which are known to be caused by specific radioactive isotopes that are released by nuclear plants, such as thyroid cancers and radioactive iodine. However, many radioactive isotopes have unpredictable impacts, such as tritium which is diffused throughout the body and can affect many different organs.

Infant Death and Childhood Cancer Reductions after Nuclear Plant Closings in the United States, with J.M. Gould, J.J. Mangano, W. McDonnell, J. D. Sherman and J. Brown , Archives of Environmental Health, 57, 23 - 31, 2002.

The Strontium-90 Baby Teeth Study and Childhood Cancer, with J.M. Gould, J.J. Mangano, W. McDonnell, J.D. Sherman and J. Brown, European Journal of Oncology, Vol. 5, Suppl. 2, 119-125, 2000.

Strontium-90 in Newborn and Childhood Disease, with Joseph J. Mangano, Jay M. Gould, Janette D. Sherman, Jerry Brown, William McDonnell, Archives of Environmental Health, 55, 240-244, 2000.

The Strontium-90 Baby Tooth Study and Childhood Cancer, with Jay M. Gould, Janette D. Sherman, Jerry Brown. J.J. Mangano and William McDonnell, The European Journal of Oncology, Vol. 5 Supplement 2, 2000.

Strontium-90 in Baby Teeth as a Factor in Early Childhood Cancer, with Jay M. Gould, Janette D. Sherman, Jerry Brown. J.J. Mangano and William McDonnell, International Journal of Health Services, 30, 515-539, 2000.

Nuclear Byproducts' Introduction into the Human Environment, with Jay M. Gould and Joseph J. Mangano, Paper presented at the Spring Meeting of the American Association for the Advancement of Science, Washington, DC, 2000.

World-Wide Effects of Chernobyl on Human Health and Productivity. Paper presented at the July 1998 meeting of the Society for the Advancement of Socio-Economics, Vienna.

Chernobyl Emissions Linked to a Variety of Adverse Health Effects in the U.S, with Joseph J. Mangano and Jay M. Gould, Paper presented at the International Congress on the Effects of Low Dose Ionizing Radiation, Muenster, Germany, March 18-21, 1998.

U.S.A. Newborn Deterioration in the Nuclear Age, 1945-1996, with Jay M. Gould and Joseph J. Mangano. Paper presented at the International Congress on the Effects of Low Dose Ionizing Radiation, Proceedings of the International Congress on the Effects of Low Dose Ionizing Radiation, Muenster, Germany, March 18-21, 1998.

Health Effects of Low Dose Exposure to Fission Products from Chernobyl and the Fermi Nuclear Reactor in the Population of Detroit Metropolitan Area, with Jay M. Gould and Joseph J. Mangano. Proceedings of the International Congress on the Effects of Low Dose Ionizing Radiation, Muenster, Germany, March 18-21, 1998.

Post-Chernobyl Thyroid Disease in the United States of America, with Jay M. Gould and Joseph J. Mangano. Presented to the International Medical Commission Conference "Chernobyl: Environmental Health and Human Rights Implications, Vienna, April 12-15, 1996.

The Enemy Within: The High Cost of Living Near Nuclear Reactors; Breast Cancer, AIDS, Low Birthweight and other Immune Deficiency Effects, with Jay M. Gould, Joseph J. Mangano and William McDonnell, Four Walls Eight Windows, New York, NY 10011, 1996.

The Health Effects of Low Level Radiation, Proceedings of a Symposium Held at the House of Commons, London, April 24, 1996, edited by Richard Bramhall, Green Audit Books, Green Audit Wales Limited, Aberystwyth 1997.

A Reply to Comments on "Breast Cancer: Evidence for a Relation to Fission Products in the Diet" with Jay M. Gould, International Journal of Health Services 25, 481-488, 1995.

Nuclear Fallout, Low Birth Weight, and Immune Deficiency, with Jay M. Gould, Presented at the International Conference on Children and Radiation, Trondheim, Norway June 1993, and published in the International Journal of Health Services 24, 311-335, 1994

Krypton-85 Releases from Nuclear Reprocessing Facilities as a Co-Factor in the Destruction of the Stratospheric Ozone Layer, with Wieland Giebel, Strahlentelex, Vol. 172-173, 1-8, March 3, 1994.

Breast Cancer: Evidence for a Relation to Fission Products in the Diet, with Jay M. Gould, International Journal of Health Services, 23, 783-804, 1993.

Radioactive Releases into the Environment and their Relation to Breast Cancer, Testimony before the Subcommittee on Human Resources and Intergovernmental Relations of the Committee on Government Operations, U. S. House of Representatives, October 30, 1993.

Low Birth Weight: Evidence for an Association with Fission Products in the Diet, with Jay M. Gould and William L. McDonnell, Presented at the International meeting on Children and Radiation, Trondheim, Norway, June 1993.

The Biological Effects of Low Level Nuclear Radiation on Human Health and Development, Paper presented at the 2nd International Conference of Radiation Victims, Berlin, Germany, September 20-25, 1992.

Testimony on Cancer Induction by Nuclear Fallout, before the Subcommittee on Compensation, Pension and Insurance of the Committee on Veterans Affairs, U.S. House of Representatives, Washington, DC, May 27, 1992.

Low Level Radiation and Mortality, with J. M. Gould, Chemtek 19: 18-21, January 1989.  
Medical X-rays and Fallout: Why we Underestimated the Health Effects of Environmental Radiation, First Global Radiation Victims Conference, September 26, 1987.

Initial Evidence for Health Effects from Chernobyl in the United States, with J. M. Gould, First Global Radiation Victims Conference," September 26, 1987.

Biological Aspects of a Star-Wars Missile Defense System. Paper presented at the April 28- May 1, 1986 Meeting of the American Physical Society, in the Session of the Forum on Science and Society, Washington, DC.

Birth Weight and Infant Mortality Changes in Massachusetts Following Releases from the Pilgrim Nuclear Plant, Report for the Township of Plymouth, Massachusetts, June 10, 1986. Heute 13: 37-43, 1986.

Die Kinder Des Atomaren Fallouts, with S. Bell, Psychologie.  
The Implications of Chernobyl for Human Health, International Journal of Biosocial Research, 8, 7-36, 1986.

Radiation Exposure of Bone Marrow Cells to Strontium-90 during Early Development as a Possible Co-Factor in the Etiology of AIDS, with J. Scheer, Annual Meeting of the American Association for the Advancement of Science, Philadelphia, Pennsylvania, May 29, 1986.

The 1983 SAT Scores and their Link to Nuclear Fallout, with S. Bell, Phi Delta Kappan 65, 372-373, Jan. 1984.

Fallout and SAT Scores: Evidence for Cognitive Damage During Early Infancy, with S. Bell, Phi Delta Kappan 64, 541-545, 1983.

A Nuclear War's Devastating Effect on Climate with W. T. Land, Letter to The New York Times dealing with the likelihood of a sharp decline in temperature, May 28, 1982.

Ernest J. Sternglass, Physicist, Interview in Nuclear Witnesses: Insiders Speak Out by Leslie J. Freeman, W. W. Norton and Company, New York, N.Y. 1981.

Secret Fallout: Low-Level Radiation from Hiroshima to Three Mile Island, McGraw-Hill Book Company, New York, N.Y., 1981. Available on-line and for downloading at rat haus.  
Shut-Down: Nuclear Power on Trial; Radiation is Causing Cancer and Birth Defects, with John W. Gofman, The Book Publishing Company, Summertown, Tennessee 38483, 1979.

Testimony in a preliminary evidentiary hearing in the Nashville, TN, Federal District Court on a Petition for Emergency and Remedial Action to suspend licenses for the nuclear industry filed by Jeannine Honicker, October 2, 1978.

Infant Mortality Changes Following the Three Mile Island Accident. Paper presented at the Fifth World Congress of Engineers and Architects, Tel-Aviv, Israel, December 1979.

Cancer Mortality Changes Around Nuclear Facilities in Connecticut, in Radiation Standards and Human Health, pp. 174-212, Proceedings of a Congressional Seminar Feb. 10, 1978, Environmental Policy Institute, Washington D.C., 20003, 1978.

Radioaktive 'Niedrig' Strahlung: Strahlenschaden bei Kindern und Ungeborenen. With foreword by Klaus Bajter and discussion by Klaus Batjer and Per Carbonell. Oberbaum Verlag, Berlin 21, Germany, 1977.

Health Effects of Environmental Radiation, Cincinnati Engineer and Scientist, 2, 7-9, 1977.  
Radioactivity: The Health Effects of Low-Level Natural and Man-Made Radiation. Chapter 15, pp. 477-515, in Environmental Chemistry, Ed. J. O'M. Bockris, Plenum Press, New York, 1977.

Testimony at a Congressional Seminar on Low Level Ionizing Radiation, Subcommittee on Energy and the Environment of the Committee on Interior and Insular Affairs, U.S. House of Representatives, May 4, 1976. U.S. Gov't. Printing Office, Washington, DC. Reprinted by the Environmental Policy Institute, July, 1977.

Testimony on the Proposed Standards for Environmental Radiation Protection for Nuclear Power Operations, Hearings by the Environmental Protection Agency (EPA), Washington, DC, March 8-10, 1976.

Implication of Dose-Rate Dependent Cell-Membrane Damage for the Biological Effect of Medical and Environmental Radiation, Proceedings of a Symposium on Population Exposures sponsored by the Health Physics Society, Knoxville, Tennessee, October 21-23, 1974

Nuclear Radiation and Human Health, in Against Pollution and Hunger, Edited by Alice Mary Hilton, Universitetsforlaget, Oslo 1974.

The Role of Indirect Radiation Effects on Cell Membranes in the Immune Response, in Radiation and the Lymphatic System, Proceedings of the 14th Annual Hanford Biology Symposium, Sept. 30-Oct. 2, 1974, ERDA Symposium Series Vol. 37, Edited by J. E. Ballou and D.D. Mahlum, pp.254-277, U.S. Atomic Energy Commission, Office of Information Services (CONF-720505)1973.

Nuclear Fission: The Biological Peril, letter to the New York Times explaining the significance of Petkau's discovery for the effects of very low annual doses from reactor releases and fallout, May 23, 1974, accompanied by an editorial.

Epidemiological Studies of Fallout and Patterns of Cancer "Mortality" Proceedings of the 12th Annual Hanford Biology Symposium, May 10-12, 1972, Edited by C. L. Sanders, R. H. Bush, J.E. Ballou and D.D. Mahlum, pp.254-277, U.S. Atomic Energy Commission, Office of Information Services (CONF-720505 )1973.

Radioactive Waste Discharges from the Shippingport Nuclear Power Station and Changes in Cancer Mortality, May 8, 1973 report submitted to Governor Milton Shapp's Hearing Board at the Aliquippa Hearings on Possible Health Effects of the Shippingport Nuclear Plant, July 31, 1973.

Significance of Radiation Monitoring Results for the Shippingport Nuclear Reactor, January 21, 1973 Report submitted to Governor Milton Shapp's Hearing Board at the Aliquippa Hearings on Possible Health Effects of the Shippingport Nuclear Plant, July 31, 1973.

Environmental Radiation and Human Health, in Effects of Pollution on Health, Proceedings of the 6th Berkeley Symposium on Mathematical Statistics and Probability, Ed. by L. M. Lecam, J. Neyman and E. L. Scott, pp.145-California Press, Berkeley, California, 1972.

Low-Level Radiation, Ballantine, New York, 1972.

Infant Mortality Changes Near the Big Rock Nuclear Power Station, Charlevoix, Michigan Testimony presented at the Licensing Hearings, Besse-Davis Nuclear Plant, Ohio, January 1971.

Infant Mortality Changes Near the Peach Bottom Nuclear Power Station in York County, Pennsylvania, Department of Radiology, University of Pittsburgh, February 7, 1971.

Summary of Testimony of Dr. Ernest J. Sternglass in the Matter of the Operating License for the Columbia University Reactor, October 7, 1971.

Infant Mortality Changes Near a Nuclear Fuel Reprocessing Plant," Testimony presented at hearings of the Illinois Pollution Control Board, November 30, 1970.

Infant Mortality and Nuclear Power Generation," Hearings of the Pennsylvania Senate Select Committee on Reactor Siting, October 21, 1970.

Infant Mortality and Nuclear Testing - A Reply, Quarterly Bulletin of the American Association of Physicists in Medicine 4: 115-119, September 1970.

The Effect of Low Level Radioisotope Contamination on Infant Mortality, Symposium on Environmental Pollution from Nuclear Reactors, Mid-West Chapters of the American Association of Physicists in Medicine and the Health Physics Society, Waukegan, Illinois, May 16-17, 1970.

A Reply, Bulletin of the Atomic Scientists, 25:41-42, May 1970.

Nuclear Air Pollution, Infant Mortality and Lung Disease, Mid-West Clinical Conference, Chicago Medical Society, March 4, 1970.

A Reply, Bulletin of the Atomic Scientists, 25: 29-34, December 1969.

A Reply, Bulletin of the Atomic Scientists, 25: 29-32, October 1969.

The Death of all Children, Esquire, pp.1a-1d, September 1969.

Radioactive Gases and Air Pollution, Pittsburgh Post Gazette, September 13, 1969.

Has Nuclear Testing Caused Infant Deaths ?, New Scientist, 43:178-181, 1969.

Infant Mortality: The Nuclear Culprit, The Medical Tribune, July 21, 1969.

Can the Infants Survive ?, Bulletin of the Atomic Scientists, 43: 178-181, July 1969.

Strontium-90 in ABM's, Letter on the enormous rise in world-wide infant mortality likely to result from the successful use of an ABM system to protect missiles, The New York Times, June 13, 1969.

Strontium-90: Evidence for a Possible Genetic Effect in Man, 14th Annual Meeting of the Health Physics Society, June 1969.

Missile Hazard, Letter on the inability of nuclear ABM systems to protect cities from devastating fallout, The New York Times, March 1, 1969.

Infant Mortality and Nuclear Tests. Bulletin of the Atomic Scientists, 25:26-28, 1969.

Evidence for Low-Level Radiation Effects on the Human Embryo and Fetus, in Radiation Biology of the Fetal and Juvenile Mammal, Proceedings of the 9th Annual Hanford Biology Symposium, May 5-8, 1969, pp. 681-692, AEC Symposium Vol. 16, Ed. by M.R. Sikov and D.D. Mahlum, Division of Technical Information U.S.AEC, 1969 (.CONF-690501).

Infant and Fetal Mortality Increases in the U.S.: Evidence for a Correlation with Nuclear Weapons Tests, meeting of the Pittsburgh Chapter of the Federation of Atomic Scientists, October 1968.

Evidence for Leukemogenic Effect of Radiation in Man at Low Dose Rates, Health Physics 15: 202, August 1968.

Leukemia: Evidence for Induction of the Diseases in Childhood by Fallout Radiation at Low Dose-Rates, 13th Annual Meeting of the Health Physics Society, Denver, Colorado, June 1968.

Biological Effect of Nuclear Weapons, in Letters on the Vietnam Issue, warning of the large biological effects of small tactical nuclear weapons, The New York Times, March 17, 1968.

Health Hazard in A-Blast for Gas Storage article on the danger of peaceful underground detonations planned for Pennsylvania, The Pittsburgh Post-Gazette, January 17, 1968.

Fatal Protection, article on the biological danger of a nuclear armed Anti-Ballistic Missile System (ABM), The Washington Post, March 12, 1967.

Nuclear Fallout and Childhood Leukemia, testimony presented at hearings of the Joint Committee on Atomic Energy, Special Subcommittee on Radiation, U.S. Congress, August 1963, U.S. Government Printing Office, Washington, DC.

Cancer: Relation of Prenatal Radiation to Development of the Disease in Childhood, Science 140:1102-1104, June 1963.