

Exhibit C

Chronology of Health Problems at Three Mile Island*

The record indicates that in reporting to State and federal officials on March 28, 1979, TMI managers did not communicate information in their possession that they understood to be related to the severity of the situation. The lack of such information prevented State and federal officials from accurately assessing the condition of the plant. In addition, the record indicates that TMI managers presented State and federal officials misleading statements (i.e. statements that were inaccurate and incomplete) that conveyed the impression the accident was substantially less severe and the situation more under control than what the managers themselves believed and what as in case the fact" ("Reporting of Information Concerning The Accident At Three Mile Island," A Report Prepared by the Majority Staff of the Committee On Interior and Insular Affairs of the US House of Representatives, 97th Congress, First session, March 1981.)

- For 11 days, in June-July, 1980, Met Ed **illegally vented 43,000 curies of radioactive Krypton-85** (beta and gamma; 10 year half life) and other radioactive gasses into the environment without having scrubbers in place. (6)
- In November, 1980, the United States Court of Appeals for the District of Columbia ruled that the krypton venting (June-July, 1980) was illegal.
- In February, 1981, a **\$20 million fund is set up to pay over 15,000 claims for affected area residents and business within the 25-mile radius of TMI**. Another \$5 million was set up to establish the TMI Public Health Fund. However, several years after the establishment of the TMI Public Health Fund (1986), TMI-Alert and area political representatives unsuccessfully petitioned the federal court to remove the Fund's administrators due to nepotism and poor communication with the community.

The lead attorney in the class action, David Berger of Philadelphia, received \$1,389,06 (\$25-\$260 per hour), his family law firm billed \$175,056 and additional \$20,112 for report preparation. Total legal bills totaled \$2.5 million, which was less than the \$4 million the attorney requested from the Court. Judge Sylvia Rambo received the fees.

- March, 1982, The **American Journal of Public Health** reported, "During the first two quarters of 1978, the neonatal mortality rate within a ten-mile radius of Three Mile Island was 8.6 and 7.6 per 1,000 live births, respectively. During the first quarter of 1979, following the startup of accident prone Unit 2, the rate jumped to 17.2; it increased to 19.3 in the quarter following the accident at TMI and returned to 7.8 and 9.3, respectively, in the last two quarters of 1979." (Dr. Gordon MacLeod, Secretary, Pennsylvania Department of Health)

- In February, 1983 11,000 claims for lost wages and evacuation expenses was settled for \$2.35 million.
- From July 24-27, 1984, during the 159-ton reactor head lift, which was delayed due to polar crane failure, **GPU vented radioactive gases** into the environment despite pledges by the Company and NRC that no radioactive releases would occur. This is the first time there has been direct access to Unit-2's damaged fuel. GPU was fined \$40,000 by the NRC for this violation.
- On November 6, 1984, research conducted by the Department of Energy (DOE) on reactor damage during the accident, indicates temperatures may have reached in excess of 4,800 degrees. (See February 9, 1990, for follow-up research.)
- In 1985 **"TMI's owners and builders had paid more than \$14 million for out-of-court settlements of personal injury lawsuits. The largest settlement was for a child born with Down's Syndrome."**(\$12.250 million paid to 280 plaintiffs and Orphans Court Cases.)
- On July 12, 1985, **two workers who participated in the initial phase of the cleanup and contracted cancer, joined 2,500 area residents suing GPU.**
- August, 1985: Marc Sheaffer, a psychologist at the Uniformed Services University of the health Sciences in Bethesda, **released a study linking TMI-related stress with immunity impairments.** (See August, 1987 and April, 1988, for related studies.)
- August, 1987: James Rooney and Sandy Prince of Embury of Penn State University reported that **chronically elevated levels of psychological stress** have existed among Middletown residents since the accident. (See August, 1985 and April, 1988, for related studies.)
- April, 1988: Andrew Baum, professor of medical psychology at the Uniformed Services University of the health Sciences in Bethesda discussed the results of his research on TMI residents in *Psychology Today*. **"When we compared groups of people living near Three Mile Island with a similar group elsewhere, we found that the Three Mile Island group reported more physical complaints, such as headaches and back pain, as well as more anxiety and depression.** We also uncovered long-term changes in levels of hormones...These hormones affect various bodily functions, including muscle tension, cardiovascular activity, overall metabolic rate and immune-system function..." (See August, 1985 and August, 1985, for related studies.)

- 1989, after ten years of defueling activities, **5,000 TMI workers have received “measurable doses” of radiation exposure.**
- June, 1991, Columbia University’s Health Study (Susser-Hatch) published results of their findings in the American Journal of Public Health. The study actually shows a more than doubling of all observed cancers after the accident at TMI-2, including: lymphoma, leukemia, colon and the hormonal category of breast, endometrium, ovary, prostate and testis. For leukemia and lung cancers in the six to 12 km distance, the number observed was almost four times greater. In the 0-six km range, colon cancer was four times greater. **The study found “a statistically significant relationship between incidence rates after the accident and residential proximity to the plant.”** (See August, 1996 for Wing Study.)
- By 1993, TMI-2 had **evaporated 2.3 million gallons of accident generated radioactive generated water**, including tritium a radioactive form of hydrogen (half life; 12. 5 years), into the atmosphere despite legal objections from community-based organizations.
- June 4, 1996 - U.S. District **Judge Sylvia H. Rambo** granted summary judgment to GPU and its codefendants in consolidated proceedings of more than 2,000 personal injury claims arising from the March 1979 accident at TMI. (See August 1996, November 2, 1999 and June 12, 2000 for related health suit activities.)
- August, 1996 ,a study by the University of North Carolina-Chapel-Hill, authored by Dr. Steven Wing, reviewed the Susser-Hatch (Columbia University) study released in June 1991. Dr. Wing reported “**...there were reports of erythema, hair loss, vomiting, and pet death near TMI at the time of the accident...Accident doses were positively associated with cancer incidence. Associations were largest for leukemia, intermediate for lung cancer, and smallest for all cancers combined...Inhaled radionuclide contamination could differentially impact lung cancers, which show a clear dose-related increase.**” (See June 4, 1996, November 2, 1999 and June 12, 2000, for related developments on TMI health claims.)
- By 1996, the plant's owners, codefendants and insurers have paid over **\$80 million** in health, economic and evacuation claims, including a \$1.1 million settlement for a baby born with Down's Syndrome.

- November 2, 1999, the Third Circuit Court of Appeals “revived the the rest of the lawsuits [1,990], citing those individuals constitutional right to have their cases heard by a jury.” The Circuit Court upheld U.S. District Chief Judge Sylvia H. Rambo’s “ruling on the expert testimony and the dismissal of the 10 [test cases.” (Pennsylvania Law Weekly, June 12, 200). (Also refer to June 14 and August 1996 and June 12, for United States Supreme Court rejection of GPU’s appeals.)

- June 12, 2000, the United States Supreme Court , without comment, rejected an appeal by GPU to throw out 1,990 health suits. (Please refer to June 4 and August 1996 and November 2 1999, and May 2, 2001, for related developments.)

- May 2, 2001, the Third Circuit Court ruled that “new theories” to support medical claims against Three Mile Island **will not be allowed**. (Please refer to June 4 and August 1996 and November 2 1999, and July 12, 2000, for related developments.)

- **Thyroid cancer, 1995-2002:** Dr. Roger Levin, chief division of otolaryngology/head and neck surgery, Pinnacle Health System in Harrisburg, and clinical associate professor of surgery, Penn State College of Medicine. Levin did his research so he could join The Triological Society, a society for ear, nose and throat specialists and head and neck surgeons. His paper is scheduled to be published in the society's peer-reviewed journal, The Laryngoscope, in an upcoming month.

Findings: In reviewing state health data, Levin found more thyroid cancer cases than expected in York County for every year except one between 1995 and 2002. One plausible reason could be people were exposed to radiation during the 1979 Three Mile Island accident, he said.

- November, 2003: “Objectivity and Ethics in Environmental Health Science” was published by Dr. Steve Wing, Department of Epidemiology, School of Public Health UN-Chapel Hill. **Dr. Wing discussed “research into health effects of the 1979 accident at Three Mile Island...as an example of how scientific explanations are shaped by social concepts, norms and preconceptions.”** (*Environmental Health Perspectives*, Volume 111, Number 1 , November 2003, pp. 1809-1818).

Dr Wing concluded:

Many rural people living near TMI [Three Mile Island] had modest levels of formal schooling and little experience in being assertive with government and industry officials. Those that spoke about their experiences of physical problems from the accident endured ridicule. The Aamodts [Marjorie and Norman] were able to influence the TMI Public Health Fund's sponsored research on physical impacts of the accident by initiating their own survey, researching government records, and petitioning the NRC. Other residents who lived within the 10-mile area also conducted surveys, constructed disease maps, and documented damage to plants and animals (Osborn 1996; Three Mile Island Alert 1999.) However, when health studies were undertaken through official channels, citizens who believed that had been affected by accident emissions and their supporters were not included in the framing of the questions, study design, analysis, interpretation or communication of results. The studies themselves were funded by the nuclear industry and conducted under court-ordered constraints, and a priori assumptions precluded interpretation and observations as support for the hypotheses under investigation...

The naive approach to objectivity, represented in the Daubert criteria, contends that scientists can produce unbiased evidence by standing apart from legal conflicts and adhering to normative science. The problem with this position is that scientific questions and the details of the specific working hypotheses emerge from conflicts, which also influence the assumptions that frame methodologies used to produce evidence and interpretations of the meaning of evidence...

Pretending that there are no assumptions embedded in scientific methodology conceals and reinforces existing inequalities"

* *Compiled by Three Mile Island Alert, Inc., tmia.com
a safe-energy organization based in Harrisburg, Pennsylvania
and founded in 1977.*