

Jevitorion Guam

OFFICE OF THE COVERNOR
UFISINAN I MAGALAHI
AGANA, GUAM 96910 U.S.A.



SEP 0 1 1989

The Honorable Joe T. San Agustin Speaker, Twentieth Guam Legislature Post Office Box CB-1 Agana, Guam 96910

Dear Mr. Speaker:

Transmitted herewith is Bill No. 666, which I have signed into law this date as Public Law 20-32.

Sincerly yours,

JOSEPH F. ADA

Governor

Enclosure

TWENTIETH GUAM LEGISLATURE 1989 (FIRST) Regular Session

CERTIFICATION OF PASSAGE OF AN ACT TO THE GOVERNOR

This is to certify that Substitute Bill No. 666 (COR), "AN ACT TO APPROPRIATE NINE HUNDRED THOUSAND DOLLARS (\$900,000) TO ASSIST PERSONS POISONED BY PCB BECAUSE OF THE 1987 TRANSFORMER EXPLOSION AT THE NAVY PUBLIC WORKS CENTER, GUAM, TO ESTABLISH A PCB RECOVERY FUND, TO APPROPRIATE FUNDS FOR TESTING CERTAIN EXPOSED AGANA HEIGHTS RESIDENTS, AND TO ENTITLE THE ACT AS THE "PCB RECOVERY FUND ACT OF 1989," was on the 28th day of August, 1989, duly and regularly passed.

JOE T. SAN AGUSTIN Speaker

Attested:

PILAR C. LUJAN
Senator and Legislative Secretary

This Act was received by the Governor this __/sr day of _Sept_, 1989, at _8:58 o'clock a.m.

Assistant Staff Officer
Governor's Office

APPROVED:

JOSEPH F. ADA Governor of Guam

Date: SEP 01 1989

Public Law No. 20-32

TWENTIETH GUAM LEGISLATURE 1989 (FIRST) Regular Session

Bill No. 666 (COR)
Substituted by the Committee on
Ways and Means and the Committee on
General Governmental Operations

Introduced by:

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- T. S. Nelson
- C. T. C. Gutierrez
- H. D. Dierking
- J. T. San Agustin
- F. R. Santos
- E. P. Arriola
- P. C. Lujan
- D. Parkinson
- G. Mailloux
- M. Z. Bordallo
- E. D. Reyes
- J. G. Bamba
- T. V. C. Tanaka
- M. D. A. Manibusan
- E. R. Duenas
- D. F. Brooks
- E. M. Espaldon
- J. P. Aguon
- M. C. Ruth
- F. J. A. Quitugua
- A. R. Unpingeo

AN ACT TO APPROPRIATE NINE HUNDRED THOUSAND DOLLARS (\$900,000) TO ASSIST PERSONS POISONED BY PCB BECAUSE OF THE 1987 TRANSFORMER EXPLOSION AT THE NAVY PUBLIC WORKS CENTER, GUAM, ESTABLISH A PCB RECOVERY FUND, APPROPRIATE **FUNDS** FOR TESTING CERTAIN **EXPOSED AGANA HEIGHTS** RESIDENTS, AND TO ENTITLE THE ACT AS THE "PCB RECOVERY FUND ACT OF 1989."

BE IT ENACTED BY THE PEOPLE OF THE TERRITORY OF GUAM: Section 1. Legislative Findings. The Legislature hereby finds and determines that on or about May 26, 1987, approximately sixty (60) gallons of polychlorinated biphenyls ("PCB"), a highly toxic substance which is readily absorbed in the human body and accumulates until reaching harmful

levels, were released under pressure by a transformer explosion inside the Piti Power Plant at the Navy Public Works Center, Guam, ("PWC") and, of even greater concern to the PWC employees, such a release of PCB creates even more potent toxins called dioxins and furans.

At the time of the explosion, twenty-nine (29) PWC employees were directly exposed to the PCB-contaminated oil. While the Navy did initiate cleanup efforts, it did not immediately test the contaminated area for dioxins and furans. The Navy had not provided adequate personal protective equipment, and had not provided hazardous materials management training to all the plant operators or support personnel assisting in the cleanup. According to the General Accounting Office Report dated September 1988, entitled "Toxic Substances: PCB Spill at the Guam Naval Power Generating Plant", the Navy had not taken all of the required precautions necessary to properly protect its employees.

During the initial incident, when plant workers tried to contain the spill, no personal protective equipment was worn. During emergency response and cleanup, employees used personal protective equipment that was not recommended for the use under the situation that occurred, and the appropriate personal protective equipment was not available anywhere in the Navy supply system.

On or about July 14, 1987, when the presence of dioxins and furans was confirmed, the Navy discontinued the PCB cleanup. As a result, Navy Hospital Guam was tasked with the responsibility of monitoring two hundred fifty-one (251) employees who may have been affected or contaminated with PCB. After consultation with the PWC's Safety Officer and the Hospital's Occupational Safety and Health Preventive Medicine Personnel, PWC's emergency response team and the cleanup crews entered the contaminated area before determining whether there was a potential for dioxin and furan contamination. As a result, the response team and the cleanup crews may have unnecessarily been contaminated, all because of the lack of personal protective equipment.

Furthermore, PWC officials did not recognize that pressurized release of PCB's is considered a fire-related incident when heat is generated. Navy instructions available in Guam indicated that such a pressurized

release could generate enough heat so that the more potent dioxins and furans could be released.

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Although some of the PWC employees on the emergency response team received some training on the procedures to use during a PCB spill, other individuals, including plant operators who helped during the cleanup, had very little or no training on the dangers of PCBs and how to respond to a PCB spill. Because these employees were not properly trained, they were contaminated with PCB, and quite possibly may have been contaminated with dioxin and furans.

PWC officials did not equip the employees with the personal protective equipment recommended in Navy guidelines and regulations. Throughout this period, the Navy constantly changed the requirements on the types of respirators to be worn by employees. Furthermore, the Navy did not immediately determine if dioxins and furans were present. This resulted in employees being allowed to enter the contaminated area without wearing the proper personal protective equipment.

Because the Navy did not have the required personal protective equipment at the time of the spill and for a significant portion of the cleanup, plant operators and cleanup crews may have been directly exposed to PCB and to harmful levels of dioxins and furans.

The Legislature having stated its findings, hereby declares that the purpose of this Act is to further and supplement the desires of those PWC employees contaminated with PCB by declaring the following:

- (a) That it is in the public interest to seek from the United States or its agents, the creation of an adequate program of remedies to the employees and their families contaminated with PCBs as a result of the PCB spill at the Piti Power Plant;
- (b) That it is in the public interest to investigate and pursue, on behalf of these employees, the steps and procedures necessary to secure adequate and just compensation; and
- (c) That it is in the public interest for the employeesto be assisted in proceeding with the legal work, consultant and medical support services necessary to allow such a settlement to take place.

Section 2. Definitions. As used in this Act:

- (a) 'Employee' means a person employed by the Public Works Center, by the government of Guam, or by the United States, who was assigned to assist in the PCB cleanup at the Piti Power Plant or who was involved in any other spills of toxic materials, and includes a person who has either resigned, retired or been terminated, either as a permanent or a temporary employee, who at one time or another rendered service to the Public Works Center in the course of the spill or cleanup of the PCBs or any other toxic material.
- (b) 'Public Works Center' means the Navy Public Works Center, Guam.
- (c) 'Federation' means the American Federation of Government Employees, Local 1689, Inc.
- Section 3. Employees' PCB Recovery Fund. There is hereby created the "Employees PCB Recovery Fund" whose purpose is to give financial assistance to employees and their families and to the Federation to assist employees, their families, and the Federation in obtaining the necessary legal, consultant, and medical support services needed to redress the injustice described in this Act. The Fund shall be utilized to give financial assistance to the employees, their families and the Federation to contract with attorneys and necessary non-attorney consultant and medical support staff, to further their aims in securing compensation and other remedies from the United States and its agents and from the manufacturers and suppliers of the transformer.
- Section 4. Appropriation. (a) Nine Hundred Thousand Dollars (\$900,000) are hereby appropriated from the General Fund to the Fund for the uses specified in Section 3 of this Act.
- (b) Three Hundred Thousand Dollars (\$300,000) are hereby authorized to be appropriated from the General Fund to the Fund for the uses specified in this Act.
- Section 5. Administering Authority. The Public Defender Service Corporation (the "Corporation") shall be the administering authority of the Fund and shall administer the Fund and give the authorized financial

assistance. The Corporation shall promulgate rules and regulations necessary for the operation of the Fund in accordance with this Act. In the event the employees, their families, or the Federation recover monetary damages, then the financial assistance given them shall be treated as loans and be duly repaid, but in no event shall the interest on such loans exceed three percent per annum.

Section 6. Short Title. This Act may be cited as "The Employees PCB Recovery Fund Act of 1989."

Section 7. Ten Thousand Dollars (\$10,000) are appropriated from the General Fund to the Department of Public Health and Social Services to arrange for and pay for PCB testing of the Carmen I. Santos family, Commissioner Frank Portusach of Agana Heights, Antonio C. Bayona of Barrigada, and such other persons as may be determined resulting from the October 31, 1980 transformer leak incident in Agana Heights. The Director of Public Health and Social Services shall report to the Legislature the results of these tests within ninety (90) days of the enactment of this Act.

TWENTIETH GUAM LEGISLATURE 1989 (FIRST) Regular Session

ROLL CALL SHEET

| Bill No. <u>666</u> | | | Dat | e: 8/24/89 | | | |
|---------------------|---|-----|---------------|------------|--|--|--|
| Resolution No. | | | | | | | |
| QUESTION: | | | | | | | |
| | AYE | NAY | NOT VOTINO | ABSENT | | | |
| J. P. Aguon | | | | | | | |
| E. P. Arriola | V | | | | | | |
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| T. V. C. Tanaka | V | | | | | | |
| A. R. Unpingco | ~ | | | | | | |



Twentieth Guam Tegislature

163 Chalan Santo Papa Street Agana, Guam 96910

August 7, 1989

The Honorable Joe T. San Agustin Speaker Twentieth Guam Legislature 163 Chalan Santo Papa Agana, Guam 96910

Via: Chairman, Committee on Rules

Dear Mr. Speaker:

The Committees on General Governmental Operations; Ways and Means; Federal, Foreign and Legal Affairs; and Health, Welfare and Ecology; to which was referred

Bill No. 666 "An act to appropriate the sum of Nine Hundred Thousand Dollars (\$900,000) to assist Polychlorinated Biphenyls (PCB) affected employees resulting from a transformer explosion at the Navy Public Works Center, Guam: to establish an Employees' PCB Recovery Fund: to cite the Act as the Employees' PCB Recovery Fund Act of 1989",

has had the same under consideration and now wishes to report back the same with the **recommendation to do pass as substituted**.

The votes of the Committees are as follows:

| | Committee on General Govern- mental Operations | Committee on Ways and Means | Committee on Federal Foreign and Legal Affairs | Committee on Health Welfare & Ecology |
|------------------------|--|-----------------------------------|--|--|
| To do pass | 13 | 11 | 8 | 11 |
| Not to pass | 0 | 0 | 0 | 0 |
| To report out | 0 | 0 | 0 | Ô |
| Off-island | 1 | 1 | 2 | Ô |
| Place in Inactive File | 0 | 0 | Ō | 1 |
| Other | 0 | 0 | 0 | 0 |

The Honorable Joe T. San Agustin Page 2 August 7, 1989

A Joint Report by the Committees and other pertinent documents are enclosed for your perusal.

TENCO MEL CON

Chairman, Committee on

General Governmental Operations,

Sincerely,

CARL T.C. GUTIERREZ

Chairman

Committee on Ways & Means

FRANK R. SANTOS

Chairman, Committee on Federal

Foreign & Legal Affairs

MADELEINE Z. BORDALLO Chairman, Committee on Health, Welfare & Ecology

Enclosures



COMMITTEE ON GENERAL GOVERNMENTAL OPERATIONS VOTE SHEET ON SUBSTITUTE BILL NO. 666

AN ACT TO APPROPRIATE THE SUM OF NINE HUNDRED THOUSAND DOLLARS (\$900,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES RESULTING FROM A TRANSFORMER EXPLOSION AT THE NAVY PUBLIC WORKS CENTER, GUAM: TO ESTABLISH AN EMPLOYEES' PCB RECOVERY FUND: TO CITE THE ACT AS THE EMPLOYEES' PCB RECOVERY FUND ACT OF 1989.

| | COMMITTEE MEMBERS: | TO DO PASS: | NOT TO PASS: | REPORT OUT: | INACTIVE FILE: |
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| (| T. S. Nølson, Chairperson H. D. Dierking, Vice Cha | | | | |
| Q. | E. P. Arriola, Member | | · · · · · · · · · · · · · · · · · · · | | |
| ` | M. M. Bardallo, Member | | | | |
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| | P. C., Lujan, Member | | | *************************************** | |
| | G. Railloux, Member | | | | |
| | D. Parkinson, Member | | | | |
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| | F. R Santos Member | | *************************************** | | |
| | J. F. San Agustin, Speak | er & Ex-0 | fficio | | |
| (| J. G. Bamba, Member | <u> </u> | | | |
| < | E. P. Duenas, Member | | | | |
| | T. V.C. Tanaka, Member | -\ | | | |



COMMITTEE ON WAYS AND MEANS VOTE SHEET ON SUBSTITUTE BILL NO. 666

AN ACT TO APPROPRIATE THE SUM OF NINE HUNDRED THOUSAND DOLLARS (\$900,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES RESULTING FROM A TRANSFORMER EXPLOSION AT THE NAVY PUBLIC WORKS CENTER, GUAM: TO ESTABLISH AN EMPLOYEES' PCB RECOVERY FUND: TO CITE THE ACT AS THE EMPLOYEES' PCB RECOVERY FUND ACT OF 1989.

| COMMITTEE MEMBERS: | TO DO PASS: | NOT TO PASS: | REPORT OUT: | INACTIVE FILE: |
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| C. T.C. Gutierrez, Chai | rperson | | *************************************** | |
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| J. P. Aguan, Member | | | | |
| T. S Nelson, Member | | | | |
| D. Parkinson. Member | | | | |
| F. J.A. Quituqua Membe | | | | |
| J. T. San Agustin, Spea | ker & Ex- | Officio | | *************************************** |
| G. Bamba, Member | | | ····· | |
| Dy. F. Brooks, Member | | | | F - |
| E. M. Espaldon, Member | | | - | |
| OFF-18 LAND M. D.A. Marikusan, Memb | er | | | |
| M. C. Ruth, Member | Jn 7/7/80 | | | |



COMMITTEE ON FEDERAL, FOREIGN & LEGAL AFFAIRS VOTE SHEET ON SUBSTITUTE BILL NO. 666

AN ACT TO APPROPRIATE THE SUM OF NINE HUNDRED THOUSAND DOLLARS (\$900,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES RESULTING FROM A TRANSFORMER EXPLOSION AT THE NAVY PUBLIC WORKS CENTER, GUAM: TO ESTABLISH AN EMPLOYEES' PCB RECOVERY FUND: TO CITE THE ACT AS THE EMPLOYEES' PCB RECOVERY FUND ACT OF 1989.

| COMMITTEE MEMBERS: | TO DO PASS: | NOT TO PASS: | REPORT OUT: | INACTIVE |
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| F. R. Santos, Chairman | | | | - |
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| P. C. Idjan, Vice-Chai | rperson | | | |
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| E. P. Arriola, Member | | | | |
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| H. D. Dierking Member | | | | |
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| T. S. Nelson, Member | | | | |
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| E.D. Reyes, Member | | | | |
| A. T. Ban Agustin, Spei | nleo S. Err. C | ee isis | | |
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| J. G. Bamba, Member | <u> </u> | **** | | |
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| VEE-181 AVID | | | | |
| M. D.A. Manibusan, Meml | per | | | |
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COMMITTEE ON HEALTH, WELFARE & ECOLOGY VOTE SHEET ON SUBSTITUTE BILL NO. 666

AN ACT TO APPROPRIATE THE SUM OF NINE HUNDRED THOUSAND DOLLARS (\$900,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES RESULTING FROM A TRANSFORMER EXPLOSION AT THE NAVY PUBLIC WORKS CENTER, GUAM: TO ESTABLISH AN EMPLOYEES' PCB RECOVERY FUND: TO CITE THE ACT AS THE EMPLOYEES' PCB RECOVERY FUND ACT OF 1989.

| COMMITTEE MEMBERS: | TO DO PASS: | NOT TO PASS: | REPORT | INACTIVE FILE: |
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| M. M. pordallo, Chairpe | erson | | | |
| G. Mailloux, Vice-Chair | person | | | |
| E. P. Arriola, Member | <u> </u> | | | |
| H. D. Dierking, Member | | *************************************** | | |
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| T S. Nelson, Member | | | | |
| E. D. Reyes, Member | | | | - |
| T. San Agustin, Spea | ker & Ex-O | fficio | | |
| E. M. Espaldon, Member | | | *************************************** | |
| M. D.A. Manibusan, Member | er | | | |
| M. C. Ruth Member | night | 89 | | ************************************** |
| Tanaka, Member | | *************************************** | **** | |
| A. R. Unpingco, Member | | | | |



JOINT REPORT COMMITTEE ON WAYS AND MEANS AND THE COMMITTEE ON GENERAL GOVERNMENTAL OPERATIONS ON BILL NO. 666

AN ACT TO APPROPRIATE THE SUM OF ONE HUNDRED THOU-SAND DOLLARS (\$100,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES AT THE PUBLIC WORKS CENTER, NAVY, GUAM, AND TO ESTABLISH AN EMPLOYEES' PCB RECOVERY FUND. [Attachment 1]

Introduced by Senators
Ted S. Nelson, Marilyn D.A. Manibusan, Carl T.C. Gutierrez,
Herminia D. Dierking, Joe T. San Agustin, and J. George Bamba

PREFACE:

The Chairman of the Committee on Ways and Means, to which was referred Bill No. 666, "An act to appropriate the sum of One Hundred Thousand Dollars (\$100,000) to assist Polychlorinated Biphenvls (PCB) affected employees at the Public Works Center, Navy, Guam, and to establish a PCB Employees' Recovery Fund," authorized the Chairman of the Committee on General Governmental Operations to conduct a public hearing on the above-captioned measure. [Attachment 2]

The Chairman of the Committee on General Governmental Operations, upon receipt of the appointment letter, scheduled a public hearing on Monday, June 12, 1989 at 4:30 p.m. in the Legislative Session Hall. [Attachment 3]

Committee members present at the hearing were Senator Ted S. Nelson, Chairman of the Committee on General Governmental Operations, Senator Herminia D. Dierking, Acting Chairman, Committee on Ways and Means, Senator Frank R. Santos, Chairman, Committee on Federal, Foreign and Legal Affairs. Also present were Senators Elizabeth P. Arriola, and Tommy V.C. Tanaka. [Attachment 4]

NOTIFICATION:

Letters [Attachment 5] of notification were sent to: Governor Joseph F. Ada; RADM Thomas J. Johnson, Commander, Naval Forces Marianas; CAPT Ralph M. Cugowski, Commanding Officer, PWC Guam; Mr. Manuel Q. Cruz, President, American Federation of Government Employees, Local No. 1689, Inc.; to all PCB-Affected Claimants; Mrs. Elizabeth Barrett-Anderson, Attorney General, Department of Law; Mr. Wilfred G. Aflague, Director of Administration; Mr. Michael J. Reidy, Director of the Bureau of Budget and Management Research; Mr. Raymond S. Laguana, President of the Commissioners Council; to the respective Committee members; and to the news media.

TESTIMONY:

Appearing before the Committee were Mr. Manuel Q. Cruz, President, American Federal of Government Employees, Local 1689, Inc., [Attachment 6] and Attorneys Alan C. Milstein, (Mesirov, Gelman, Jaffe, Cramer, and Jamieson), Bennet A. McConaughy, (Foster, Pepper, and Shefelman) and Randy Cunliff, (Cunliff and Cook). The Attorneys present represent the employees of Public Works Center who have filed claims against the Navy, General Electric and Monsanto.

In his testimony before the Committee, Mr. Cruz testified that the Federation supports the passage and enactment of Bill No. 666 with minor amendments. Mr. Cruz also said that the explosion that occurred at the Piti Power Plant resulted in the high pressure release of 50 to 60 gallons of nearly pure PCB. The Navy, according to Mr. Cruz, later discovered that the explosion also discharged dioxins and furans. He elaborated saying that dioxins and furans are among the most toxic chemicals known to man.

Mr. Cruz testified that there are over 200 employees and their families who were dangerously exposed to these deadly chemicals. He also said that the transformers that exploded were not labeled as containing PCB. Mr. Cruz recounted the incident saying that the employees rushed through a deadly fog to the site of the damaged transformer, without any protective gear, got down on hands and knees with rags and started to mop up and contain the PCB spill. The employees were later evacuated when the pressence of PCB's was discovered. While employees were being evacuated, another was sent back in to retrieve the time cards.

For two (2) months following the explosion, employees were exposed on an intensive, daily basis to PCB's, dioxins and furans. Throughout this period, the employees were never provided with the proper protective gear or facilities. Instead, they were issued garbage bags to wrap over their shoes, half respirators, which left their eyes and face exposed, rubber gloves which melted in the solvents with which they were working.

Concluding his testimony, Mr. Cruz stated that the budget being requested is modest. It will allow the law firm representing the emloyees to assign two (2) paralegals and two (2) attorneys to work on the case. Furthermore, it can be expected that the United States and the private defendants will throw many more attorneys and much more money into defending these claims. On behalf of the PCB-affected claims, Mr. Cruz requested that the initial funding be increased to \$800,000, and urged passage and enactment of Bill No. 666.

At this time, Mr. Cruz asked that the testimony of Mr. Arnold Schecter, M.D., M.P.H. be read and made a part of the Committee Report. There being no objection, the Chairman ordered that Dr. Shecter's testimony be incorporated and labeled as **Attachment 7**.

For the information of the Committee, Mr. Cruz highlighted the career and involvement of Dr. Shecter. He informed the Committee that Dr. Schecter is currently a Professor in the Department of Preventive Medicine, College of Medicine, State University of New York, Health and Science Center in Binghamton, New York. Mr. Cruz also informed the Committee that Dr. Schecter taught at Harvard Medical School, the State University of New York, Downstate Medical Center and the New Jersey Medical School. A copy of Dr. Schecter's curriculum vitae is enclosed as Attachment 8.

According to Mr. Cruz, Dr. Schecter based his testimony on his review of the General Accounting Office Report on the PCB Spill at the Piti Power Plant. Dr. Schecter concluded that th eemployees called in to clean up the spill appear to have been exposed to dangerous levels of PCB's, dioxins and furans. Dr. Schecter also wrote that if these employees brought these dangerous and highly toxic substances home, it is quite possible that family members may have also been exposed to these toxic chemicals.

In his testimony, Dr. Schecter stated that with the Legislature's help, he is ready to attempt to determine the extent of the exposure of these toxic substances. According to him, many of the employees will suffer in the years to come. Dr. Schecter also wrote that he will prepare a thorough medical monitoring program to ensure, as best as medical science is capable of ensuring, that if any of the employees develop medical problems as a result of their exposure they can receive prompt medical attention along with appropriate care to decrease preventable deaths and to otherwise diminish suffering.

For the record, the Chairman announced that additional written testimony was received from Mr. James P. Castro [Attachment 9], who supports the passage and enactment of Bill No. 666, and RADM Thomas J. Johnson [Attachment 10], who informed the Committee that it would be inappropriate for the Navy to comment since legal action has been instituted against the Navy.

At this time, the Chairman asked if any of the employees present would like to submit testimony. In response to the Chairman's request, several employees testified. However, because of the pendency of their case in the District Court and the Navy, the Committee wishes not to make public or publicize the testimonies submitted by the employees except for that fact they all support passage and enactment of Bill No. 666.

There being no further witnesses, the Chairman, allowed the Committee members to query the primary witness.

In her opening statement, Senator Elizabeth P. Arriola stated that after reviewing the testimonies presented and the General Accounting Office Report, I am convinced that something must be done. "How unconscionable can the Navy be!" lamented Arriola. At this time she expressed her support for the bill and requested the Chairman that she be included as one of the sponsors.

Senator Herminia D. Dierking at this time expressed her concerns whether the amount being requested would jeopardize the passage and enactment of Bill No. 666. Attorney Randy Cunliff responded saying that the initial cost and intent of the legislation was to assist the employees. He went on to say that an increase in the funds would not jeopardize the passage and enactment of the legislation.

The Chairman of the Committee on Federal, Foreign and Legal Affairs, Senator Frank R. Santos was next to query the panel. He asked whether the coverage of the bill was limited only to employees at the Piti Power Plant. Mr. Manuel Cruz replied that the intent of the legislation was to assist all PCB-affected claimants. Senator Santos then asked if the employees who applied for a loan under the provisions of the bill would have to repay the fund should they not prevail in court. Attorney Cunliff and Mr. Cruz responded saying they support whatever the Committee decides and deems proper. In response, Senator Santos suggested to the Committee Chairman that the only time the employees should repay the fund, is when they prevail in court.

There being no objection, the Chairman noted the suggested amendment and instructed the Committee staff to insert the appropriate language. There being no further questions, the Chairman thanked the employees present, the president of the AFGE and the attorneys for taking time from their busy schedule to appear before the Committee.

At this time, Mr. Cruz interjected saying "all the employees are asking for is a helping hand...ayuda taotao'ta...they deserve it." On this note, Senator Santos informed the Chairman that he would also like to co-sponsor the legislation. There being no objection, the Chairman instructed the Committee staff to list Senator Santos as one of the co-sponsors of Bill No. 666.

The Legislature has an obligation to protect the health, and welfare of its people, Senator Nelson said. At this time, the Chairman presented a Summary of the General Accounting Office Report on the PCB Spill at Piti Power Plant.

There being no further witnesses, the Chairman called for the adjournment of the Committee hearing on Bill No. 666.

SUMMARY OF THE GENERAL ACCOUNTING OFFICE REPORT:

At the time of the explosion (May 26, 1987), approximately 29 employees were directly exposed to the PCB-contaminated oil. While the Navy initiated cleanup efforts, employees assigned to the emergency response crew, had received very little training on the proper procedures to use during the aftermath of a transformer explosion. Because of the Navy's lack of expertise, the Navy did not immediately test the contaminated area for dioxins and furans. Furthermore, they did not provide employees with the adequate personal protective equipment. Also, the Navy did not provide hazardous materials management training to all plant operators and other support personnel assisting in the cleanup.

The GAO Report also stated that the Navy did not take all of the required precautions to protect its employees. The Navy discontinued the PCB cleanup on July 14, 1987, when the presence of dioxins and furans were confirmed.

Emergency Response and Cleanup: On May 26, 1987, the Public Works Center emergency response team entered the plant to assess the extent of the contamination. After consultation with PWC's Safety Officer and the hospital's Occupational Health and Preventive Medicine Personnel, PWC's emergency response team and the cleanup crew were allowed to enter the contaminated area before determining whether or not there was a potential for dioxin and furan contamination. As a result, the emergency response team and the cleanup crew unnecessarily encountered contamination without proper protection.

Dioxins and Furans: Officials at PWC did not recognize that pressurized releases of PCB's are considered fire-related when heat is generated. Furthermore, Navy instructions, available in Guam, indicated that such a pressurized release could generate enough heat so that the more potent dioxins and furans could be generated.

Training: A majority of the workers on the emergency response team and the cleanup crew had received very little training on the procedures to use during a PCB spill. More importantly, other individuals, including plant operators who helped during the cleanup had very little or no training on the dangers of PCB's and how to respond to a PCB spill. Because of the Navy's negligence in not providing the proper training, the employees at Piti Power Plant were contaminated with PCB's, and it is quite possible that these employees may also have been contaminated with dioxins and furans.

Protective Equipment: The Navy did not have all of the recommended personal protective equipment in Guam at the time of the accident. The protective equipment worn varied widely from none at the time of the spill to full protection at the time of GAO's investigation. As the cleanup work continued, protective equipment was generally reduced for all workers except for the cleanup crew. However, when the more potent dioxin and furan were discovered, the equipment was changed back to full protection.

Occupational Safety and Health Administration officials and others expressed concern about the possibility that inadequate protection was provided by the type of equipment employees wore after the spill occurred until they started wearing full protective equipment.

Elimination of PCB Transformers: In May 1986, before the spill, the Chief of Naval Operations directed all major commands to replace PCB equipment in poor condition or with potential for serious health, environmental, or mission impact. As of December 1986, there were 65 PCB transformers at the Naval Complex in Guam. The transformer that exploded was one of the two (2) largest at the plant that were to be replaced in fiscal year 1989.

Medical Monitoring: After the accident, the Navy included in its medical monitoring program approximately 251 employees who were in the plant at the time of the explosion or who may have been contaminated in the cleaning activities or the continued operation of the plant. Of the 66 employees in the plant when the accident occurred and PCB-laden oil were released, 50 were examined within three (3) days at the Naval Hospital. The other sixteen (16) employees reported to the hospital at a later date.

OSHA regulations require that baseline medical examinations be given to all employees before they start work as part of the cleanup crew in a hazardous area designated for cleanup and annually thereafter and also at the time of an emergency, such as the explosion of the PCB transformer.

When the GAO conducted their investigation, they ascertained that 50 employees involved in the cleanup had not received medical examinations for over one (1) year before the accident occurred and did not receive baseline examinations until more than eighty (80) days after the accident.

The Navy did not know the medical conditions of their employees at the time of the accident. After the accident, the Navy established a medical monitoring program to include all employees who were directly exposed, participated in the cleanup or, in some way, may have been subsequently affected by the accident.

Toxic Substances Control Act: The Toxic Substances Control Act of 1976 regulates toxic substances including PCB's, dioxins and furans. The U.S Environmental Protection Agency has issued regulations for the use, management, disposal, and cleanup of PCB's. Furthermore, the Occupational Safety and Health Administration has issued rules covering employee protection requirements when working in hazardous areas or for cleaning up chemical spills.

PCB: What Is It; Effects: Polychlorinated Biphenyls, known as PCB, are a class of fire-resistent chlorinated hydrocarbon fluids that have been used mainly as insulators or heat transfer liquids in large electrical transformers and capacitors. Because of their chemical stability, PCB's tend to persist in the environment. PCB's are considered a chronic toxic hazard, since they are readily absorbed and retained by human and animal tissue. PCB's can be taken into the body through breathing, direct skin contact, or by ingesting food or drinking water.

The exposure of PCB vapors is the most dangerous mode of contact. PCB's accumulate in the body until they reach harmful levels. Short-term effect of PCB exposure may include development of skin problems such as chloracne and hyperpigmentation. Long-term, low level exposure to PCB has been observed to cause liver dalage and possible impairment of the nervous system. Also, reproductive and carcinogenic effects have been found in animals. Because PCB's cause cancer in animals, they are considered a carcinogen.

A greater concern was the exposure of dioxins and furans which is more potent than PCB. Dioxins and furans are generated when there is a fire-related or pressurized release of PCB's in which heat is generated. These toxic chemicals also cause medical problems similar to, if not worse than PCB.

COMMITTEE FINDINGS:

The Committee on Ways and Means, together with the Committee on General Governmental Operations, to which was referred Bill No. 666, finds, that:

- 1. On May 26, 1987, a transformer exploded at the Piti Power Plant. As a result of the explosion, approximately 50 to 60 gallons of PCB's spilled throughout the plant. Also, substantial quantities of dioxins and furans were released.
- Contrary to regulations issued by the U.S. Environmental Protection Agency, the transformer was not labeled as containing PCB's. Furthermore, the employees were not advised of the pressence of PCB's, nor were they trained to handle such an explosion. Therefore, the consequences resulted in employees, and plant operators not knowing what appropriate action to take.
- 3. As a result, a number of employees were showered with PCB's, dioxins and furans, while others inhaled a deadly mist. These employees were exposed to PCB's, dioxins and furans, at a thousand times higher than levels permissible under EPA and OSHA regulations.
- 4. A majority of the employees directly exposed and showered with PCB were allowed to leave the compound without being decontaminated or monitored by hospital officials. These employees went home not knowing that they were spreading toxic substances and exposing their spouces and dependents to PCB's, dioxins and furans, either through contact, or by their clothing, and even the sharing of food.
- 5. Because of the Navy's failure to properly treat and provide adequate medical attention to these employees, they sought the help of Senator Ted S. Nelson. The Senator after hearing the horror stories, wrote to the General Accounting Office, the Surgeon General, and various U.S. Senators and Congressmen, requesting that an investigation be conducted on the PCB spill at the Piti Power Plant.
- 6. During the months of October 1987 to March 1988, the General Accounting Office conducted an investigation and obtained information from those involved. As a result, the GAO released its final report on September 22, 1988. The report responded to the requests that GAO evaluate the Department of the Navy's cleanup efforts of the PCB spill at the Piti Power Plant.

- 7. In 1985, the General Accounting Office issued a report to Congress stating that the Department of Defense has not adequately involved regulatory agencies in its program to cleanup inactive Department of Defense owned hazardous waste sites.
- 8. In May and December 1986, the General Accounting Office released two reports which stated that the Department of Defense has difficulties in complying with EPA and OSHA regulations. One of the reports revealed that Navy audits show ninety percent (90%) of Navy's hazardous waste generators examined were not in compliance with the Resource Conservation and Recovery Act (RCRA). This public law (RCRA) regulates the management of hazardous wastes.
- 9. On May 25, 1989, approximately 1,000 individuals filed suit against General Electric Company and Monsanto Company, in the District Court of Guam. This class action suit was filed by the employees of PWC to recover for personal damages, medical treatment, and exposure to PCB, dioxins and furans. On the same day, a second suit was filed against the Navy by the affected employees and their families. This suit alledged that the Navy was negligent and did not provide adequate protection, medical treatment and monitoring to the employees and their families.
- 10. The Guam Legislature has already established precedence in this area. In the Sixteenth and Seventeenth Guam Legislatures, a Landowners Recovery Fund was established to assist land claimants secure just compensation from the United States Government.
- 11. Having reviewed all the documents submitted, the Committee recommends that Bill No. 666 be substituted to reflect the various amendments offered and to change the amount appropriated in the original bill.

SECTION ANALYSIS:

Please refer to Page 9, "Profile on Substitute Bill No. 666."

COMMITTEE RECOMMENDATION:

The Committee on Ways and Means, together with the Committee on General Governmental Operations, to which was referred Bill No. 666, "An act to appropriate the sum of Nine Hundred Thousand Dollars (\$900,000) to assist Polychlorinated Biphenyls (PCB) affected employees as a result of a transformer explosion at the Navy Public Works Center, Guam, and to establish an Employees' PCB Recovery Fund," has had the same under consideration, and now wishes to report back the same with the recommendation to do pass as substituted.

PROFILE ON SUBSTITUTE BILL NO. 666

Brief Title: "Employees' PCB Recovery Fund Act."

Main Sponsors: Senators Ted S. Nelson, Carl T.C. Gutierrez, and

Herminia D. Dierking.

Date Introduced: Submitted to the Legal Office on May 11, 1989.

Introduced and read for the first time on May

23, 1989.

Assigned Committee: Referred to the Committee on Ways and Means, the

Committee on Federal, Foreign and Legal Affairs,

and to the Committee on Health, Welfare and Ecology.

Assignment: The Chairman, Committee on Ways and Means, on

Thursday, June 1, 1989, appointed Senator Ted S. Nelson the main sponsor of the bill, to coordinate and conduct the necessary public hearing

on Bill No. 666.

Public Hearing: Pursuant to the appointment, the Chairman, Committee

on General Governmental Operations scheduled a public hearing for Monday, June 12, 1989, at 4:30

p.m. in the Legislative Session Hall.

Official Title: "An Act to Appropriate the sum of Nine Hundred

Thousand Dollars (\$900,000) to Assist Polychlorinated Biphenyls (PCB) Affected Employees, Resulting from a Transformer Explosion at the Navy Public Works Center, Guam, and to Establish an Employees'

PCB Recovery Fund."

Co-Sponsors: Senators Joe T. San Agustin, Frank R. Santos,

Elizbabeth P. Arriola, Pilar C. Lujan, Don Parkinson, Gordon Mailloux, Madeleine Z. Bordallo, Eddie D. Reyes, J. George Bamba, Marilyn D.A. Manibusan,

Tommy V.C. Tanaka and Eddie R. Duenas.

BILL DIGEST

Section 1. States the findings of the Guam Legislature that the Navy was negligent in protecting the employees at the Piti Power Plant when a transformer exploded and spilled polychlorinated biphenyls (PCB), a toxic substance. Based on a GAO investigation, the report revealed that 29 employees were directly exposed to PCB. The report went on to say that while the Navy did initiate cleanup efforts, they did not immediately test the area for dioxins and furans. The report also condemns the Navy saying that the Navy did not take all of the required precautions to protect the employees.

Furthermore, Bill No. 666 declares that its main purpose and intent is to assist those employees affected and/or contaminated with PCB. The bill also states three (3) basic principles: (1) that it is in the best interest of the employees to seek adequate remedies from the United States Government; (2) to assist the employees and their families in securing just compensation from the manufactures and the Navy; and (3) to assist the employees and their families with the necessary legal proceedings to adjudicate a fair and just settlement.

Section 2. Defines certain terms used throughout the Act to ensure clarity and specitivity.

Section 3. Creates the Employees' PCB Recovery Fund. It provides that the purpose of the Fund is to grant loans to the American Federation of Government Employees, to assist those employees and their families in securing adequate remedies from the United States Government and the manufactures of the PCB transformers. The loan is designed to assist the employees in the procurement of necessary legal, consultant and medical support staff services, needed to successfully argue and present a case against the United States Government and the manufactures.

Section 4. Appropriates \$900,000 from the General Fund to the Employees' PCB Recovery Fund. It also states that the Legislature is committed to continue making appropriations to the Fund when requested or deemed necessary by the Legislature.

Section 5. Provides that the Public Defenders Office shall be the custodian of the Fund. It also authorizes the Office to promulgate the necessary rules and regulations to govern the Fund. A three percent (3%) interest rate has been applied, and shall take effect only when the employees prevail in either the District Court or with the United State Government.

Section 6. Provides that the Act may be cited or referred to as "The Employees' PCB Recovery Fund Act of 1989."



Col. mittee on General Governmental Operations

Twentieth Guam Legislature

TEDS. NELSON Chairman

Member

Committee on Rules

June 2, 1989

Committee on Economic Development

Committee on Energy, Utilities & Consumer Protecti

Committee on Federal, Foreign & Local Affairs

Committee on Health, Welfare & Ecology

Committee on Housing & Community Development

Justice

ittee on Ways & Meens

on Youth, Senior Citizens, Cultural Affairs & Human Resources. **MEMORANDUM**

To:

From:

Senator Ted S. Nelson

All PCB-Affected Claimants

Subject: Public Hearing, Bill No. 666

This is to inform you that the Committee on General Governmental Operations will conduct a public on Bill No. 666, "An act to appropriate the sum of One Hundred Thousand Dollars to assist PCB affected employees at the Public Works Center, Navy, Guam, and to establish an Employees' PCB Recovery Fund.

For your information, the public hearing is scheduled for

Monday, June 12, 1989 at 4:30 p.m. in the Legislative Session Hall. As this measure directly affects you and your family,

addition, I would appreciate it if you would disseminate

I am inviting you to attend and submit testimony.

Committee on General **Governmental Operations**

Members

Elizabeth P. Arriota

J. George Bamba Madeleine Z. Bordello

Herminia D. Dierläng

Don Parkinson

Edward D. Reves

Frank R. Santos

Tommy V.C. Tanaka

this information to your co-workers. Should you have any questions, please feel free to

on me or Mr. James P. Castro, my Deputy Chief of Staff.

PED S. NELSON

Attachment:

Ex-Officio Membe Joe T. San Acustin

163 Chainn Santo Pass Agene, Guerr 98818



Committee on

General Governmental Operations

Twentieth Guam Legislature

TEDS. NELSON Chairman

Member

Committee on Rules

Committee on Economic Developmen

Committee on Energy, Utilities &

Committee on Federal, Foreign & Leoni Affairs

Committee on Health, Welfare &

Committee on Housing & Community

Committee on Judiciary & Crimina

Samuel Marie & Marie

Committee on Youth, Senior Citizens, Cultural Affairs & Hames Resources. Mr. Wilfred G. Aflague Director Department of Administration Agana, Guam

Dear Mr. Aflague:

The Committee on General Governmental Operations will hold a public hearing on Monday, June 12, 1989 in the Legislative Session Hall. We invite you to attend and to present the Department's position on the following bills and appointment:

Committee on General Governmental Operations

Members

Elizabeth P. Arrich

J. George Bernis

. .

Carl T.C. Gutierre

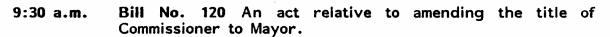
Piller C. Lujon

Don Partriago

Edward D. Raye Frank R. Santon

Tommy V.C. Tanaka

Ex-Officie Member Joe T. Sen Agustin

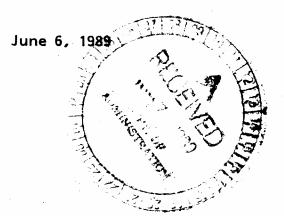


Bill No. 195 An act to appropriate the sum of One Hundred Thousand Dollars (\$100,000) to the Department of Public Works for the re-alignment of easement and just compensation for a portion of land taken from the late Francisco F. Perez, described as Lot No. 3329-3-R1, Chalan Pago, Municipality of Sinajana.

Bill No. 717 An act to appropriate the sum of One Hundred Seventy-Five Thousand Dollars (\$175,000) from the General Fund to the Land Survey Revolving Fund for the Pigua Subdivision in Merizo.

Bill No. 739 An act to appropriate funds to the Land Survey Revolving Fund for the purpose of subdividing government-owned real property and to cite the Act as the Surveying and Mapping of Government Subdivisions Act of 1989.

2:30 p.m. Appointment of Manuel S. Chargualaf to serve as a member of the Civil Service Commission.



Mr. Wilfred G. Aflague Page 2 June 6, 1989

4:30 p.m. Bill No. 666 An act to appropriate the sum of One Hundred Thousand Dollars to assist PCB-affected employees at the Public Works Center, Navy, Guam, and to establish an Employees' PCB Recovery Fund."

We trust that you or your designee will join us at this hearing.

Sincerely,

rtig Enclosures





Committee on

General Governmental Operations

Twentieth Guam Legislature

TEDS. NELSON Chairman

Member

Committee on Rules

Committee on Economic Developmen

Committee on Energy, Utilises & Communer Protection

Committee on Federal, Foreign S

Committee on Health, Welfare &

Committee on Housing & Communic

U-Verigonian.

Committee of the commit

Committee on Mine & Manage

Committee on Youth, Serier Chines, Cultural Affairs & Human Resources. June 6, 1989

Mr. Michael J. Reidy Director Bureau of Budget and Management Research Agana, Guam

Dear Mr. Reidy:

The Committee on General Governmental Operations will hold a public hearing on Monday, June 12, 1989 in the Legislative Session Hall. We invite you to attend and to present the Bureau's position on the following bills and appointment:

9:30 a.m.

Bill No. 120 An act relative to amending the title of Commissioner to Mayor.

Bill No. 195 An act to appropriate the sum of One Hundred Thousand Dollars (\$100,000) to the Department of Public Works for the re-alignment of easement and just compensation for a portion of land taken from the late Francisco F. Perez, described as Lot No. 3329-3-R1, Chalan Pago, Municipality of Sinajana.

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2:30 p.m. Appointment of Manuel S. Chargualaf to serve as a member of the Civil Service Commission.

Committee on General Governmental Operations

Mumbers

Elizabeth P. Arrisio

A George Stanton

Medaine Z. Berkele Clarking

Edward B. Dames

Cerl T.C. Gurianne

Gerden Mailma

Oon Parkingen

Edward D. Royan Frank R. Santon

Tommy V.C. Tanaka

Jon T. San Aquatin Souther





Mr. Michael J. Reidy Page 2 June 6, 1989

4:30 p.m. Bill No. 666 An act to appropriate the sum of One Hundred Thousand Dollars to assist PCB-affected employees at the Public Works Center, Navy, Guam, and to establish an Employees' PCB Recovery Fund."

We trust that you or your designee will join us at this hearing.

Sincerely 2

TED S NELSON

rtig Enclosures





Committee on

General Governmental Operations

June 6, 1989

Twentieth Guam Legislature

TEDS. NELSON Chairman

Member

Committee on Rule

Committee on Economic Developmen

Committee on Energy, Utilities &

Committee on Federal, Foreign &

Committee on Health, Welfare &

Ecology

Committee on Housing & Community
Development

on Judgiery & Crimine

Committee on Ways & Mass

Committee en Youth, Serier Chlesne, Cultural Affaire & Hamen Resources.

Committee on General Governmental Operations

Members

Elizabeth P. Arristo

J. GROUPS GERMAN

Madeleine Z. Bertall

R. Durang

Cerl T.C. Gutierrez

Plar C. Lajon

Gordon Maille

Dou Laudines

Edward D. Rayes Frank R. Santas

Tommy V.C. Tanaha

Ex-Officie Member Joe T. San Aquetin Souther Memorandum

To:

Executive Director

From:

Chairman

Subject:

Public Hearing Notice

The Committee on General Governmental Operations will hold a public hearing on Monday, June 12, 1989 in the Legislative Session Hall on the following bills and appointment:

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2:30 p.m. Appointment of Mr. Manuel S. Chargualaf to serve as a member of the Civil Service Commission.

Please send notices to the appropriate media and charge the cost of the paid announcement to the Committee. In addition, please make the Legislative Photographer and Audio Technician available at this hearing.

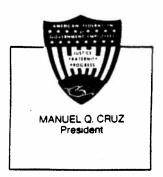
Your assistance and cooperation is appreciated.

TED S. NELSON

163 Chalan Santa Papa Agama, Guarn 66016

- 1. Testimony from Mr. Manuel Q. Cruz, President, American Federation of Government Employees, Local 1689
- 2. Testimony from Dr. Arnold J. Schecter
- 3. Curriculum Vitae of Dr. Schecter
- 4. Testimony from James P. Castro
- 5. Letters from RAD, Thomas J. Johnson to Senator Ted S. Nelson
- 6. Letter from Vice-Speaker Ted S. Nelson to RADM Thomas J. Johnson
- 7. Witness Sheet





Page 1 of 4 AMERICAN DEDERATION OF OVERNMENT EMPLOYEES LOCAL 1689, INC.,

Affiliated with the AFL CIO

DRAWER DK. AGANA. GUAM 96910 TEL: (671) 332-2290/3149 TESTIMONY

OF

In Reply Refer To:

MANUEL Q. CRUZ

BEFORE THE

COMMITTEE ON GENERAL GOVERNMENTAL OPERATIONS

20TH GUAM LEGISLATURE

MONDAY, 12 JUNE 1989

Mr. Chairman and Members of the Committee:

My name is Manuel Q. Cruz. I am the President of the American Federation of Government Employees (AFGE), Local 1689, Inc. My labor organization represents approximately 6,000 bargaining unit members in thirteen (13) Navy Commands and Activities on Guam, the Air Force at Andersen Air Force Base, and the Navy and Air Force Exchanges.

I am here today to testify in support of an amended version of draft Bill No. 666, "an Act to appropriate the sum of one mundred thousand dollars (\$100.000.00) to assist polychlorinated biphenyls (PCB) affected employees at the Public Works Center, Navv. Guam, and to establish an Employees' PCB Recovery Fund". This bill, in amended form, will provide much needed assistance to certain of our members and their families.

I will not recount in detail the circumstances of the explosion of the transformer at the Piti Power Plant on 26 May 1997. The explosion resulted in the high pressure release of 50 to 60 gallons of rearly pure PCBs. As the ... Navv discovered later, the explosion also discharged dioxids and furans. These are among the most toxic chemicals known to man. At present, we believe over 200 employees and their families were dangerously exposed to these deadly chemicals. In many cases, this exposure was the result of the failure of the Navv to follow government regulations regarding the toxic spill procedures, such as testing and personal protective equipment (PPE) requirements. On the other hand, the manufacturers of the transformer and the PCBs had not taken the proper steps to insure safe operation or handling of their products.

In addition, we believe the transformer that exploded at the Piti Power Plant was not labeled as containing PCBs.

Page 2 of 4

Employees at the plant were not told that the transformer contained PCBs; nor of the dangers of PCBs and dioxins and furans. As a result, following the accident, employees rushed through a deadly fog to the site of the damaged transformer, without any protective gear, and got down on their hands and knees with rags to mop up and contain the PCB spill. They were eventually evacuated when the presence of PCBs was discovered, but another employee was sent into the plant —without any protective gear—to pick up time cards.

The story grows more tragic. Over the next two (2) months, the clean up crew and the plant operators were exposed on an intensive, daily basis to the deadly chemicals of PCB, dioxins and furans. Throughout this period of time, they were never provided with proper protective gear or facilities. They instead wore garbage bags over their shoes, half-respirators (which left their eyes and face exposed) and rubber gloves which melted in the solvents with which they were working.

The Navy continued to operate the power plant during this period of time, and beyond, further exposing the employees. This was not because of the need for the electrical power---it was because of the political dispute with the Government of Guam over the transfer of the power plant.

As a result of these conditions, some of these people were exposed to levels of PCBs, dioxins and furans at hundreds of thousands of times the maximum legal levels. Because of inadequate safety procedures, the employees went home without having been adequately cleaned, and with contaminated clothing——thereby exposing their families to the same deadly materials.

These employees earned perhaps \$8.00 per hour to do this for two months in question and four or five months thereafter. The best indication of the seriousness of these materials is that after these employees had scrubbed down the plant for two months--removing virtually all of the toxic wastes---the Navy hired a private contractor--at a cost of about \$6 million--to "finish up". That contract cost \$6 million because of the risks, hazards, and intensive protective procedures encountered by the contractor. Unfortunately, our Navy employees who were exposed to much higher levels of PCBs, dioxins and PCBs did not have the same protection.

The Navy has provided a haphazard response to the medical needs of these employees. One example will make this clear. PCBs are accumulated in the fatty tissues of the body. To measure exposure to PCBs, a fat biopsy should be taken and analyzed. Instead, the Navy took blood tests. (The Navy stored the blood on the island for many months before having it analyzed off-island.) Using a blood test to measure PCB

Page 3 of 4

exposure several months before is like taking a blood test to measure alcohol several months before--it does not give an accurate picture.

The Navy does not have the expertise to provide medical care and monitoring to these employees. Furthermore, it does not have the incentive to provide good medical care. Putting the Navy in charge of medical care in this case is like putting the fox in charge of the henhouse.

As a result of their exposure to these life threatening chemicals, our employees and their families face an uncertain and troublesome future. Exposure to these chemicals causes greatly increased risks of cancer and other life threatening medical problems, skin and liver disorders, and reproductive problems, as well as the fear and emotional distress of living with these increased risks and uncertainties. At a minimum, these employees and their families will require many years of thorough, competent medical monitoring.

Because of the Navy's lack of expertise and incentive to help these people, they have turned to us. Our Union has made substantial efforts to evaluate and to find competent legal counsel to represent them in pursuing these claims. The lawyers have also contacted one of the leading doctors in the area of exposure to PCBs.

Pursuing these legal claims, and providing the medical services necessary, will be expensive. On the medical side, the experts advise us that the initial battery of tests will cost \$1,000-2,000 per person. A schedule for monitoring over the next five years will cost several thousand dollars per year per person. A lifetime of medical monitoring can run \$100,000 per person. Accordingly, an initial appropriation of \$250,000 appears necessary.

The legal side is similar. The United States and the manufacturers can be expected to fight any claims vigorously. They will have a staff of high-priced lawyers who will attempt to grind our employee down. The lawyers we have found are willing to meet the challenge. Because of the difficulty of winning cases such as these, law firms usually handle these cases on a contingent fee basis, where the law firm gets a percentage of up to 50% of any amount recovered for their clients. Under the laws of Guam, any contingent fee a law firm could recover is too limited to allow them to fight the kind of battle we expect. In order to cover the risk of taking this case on and yet at the same time increase the amounts ultimately received by these injured people, the lawyers are willing to take the case partly on an hourly fee basis, and partly on a contingency. They will charge 2/3 of their regular hourly rates, subject to a maximum of \$250,000 per year. They will also earn 10%

Page 4 of 4

of any recovery. An additional appropriation of \$500,000 will fund them for two years of this battle.

This budget is modest, it will allow the law firms representing the employees to assign two paralegals and two lawyers to work half-time on the case. It can be expected that the United States and the private defendants will throw many more attorneys and much more money into defending these claims.

Thus, we request that the initial amount appropriated in Bill 666 be increased to \$750,000.

On behalf of my organization and the affected employees and their families, I wish to publicly thank Senator Ted Nelson for his continuing and unwaivering support of the PCB issue here on Guam. He has truly been a guiding light for all of us.

And to all the other co-sponsors of Bill No. 666, we thank you. We also appreciate your support.

Chairman and members of the Committee, thank you for the opportunity to testify on Bill No. 666. We urge its speedy passage. This concludes my prepared testimony. I am happy to answer any questions.

To The Honorable Members of the Guam Legislature

My name is Arnold J. Schecter, M.D., M.P.H. I am currently a Professor in the Department of Preventive Medicine, College of Medicine of the State University of New York Health Science Center in Binghamton, New York. I have previously taught at the Harvard Medical School, the State University of New York, Downstate Medical Center and the New Jersey Medical School. I am a graduate of the College of the University of Chicago, of Howard University Medical School, Columbia University School of Public Health, and was a Post Doctoral Research Fellow at the Harvard Medical School.

I was a Major in the United States Army and served in the Army Medical Corp. during the Vietnam War.

At the present time, and for most of this decade, since 1981, I have focused my medical research and clinical activities on human health effects of the dioxins, dibenzofurans, PCBs and similar chemicals.

I have conducted a significant amount of research on the effects of toxic substances, particularly polychlorinated biphenyls, dibenzofurans and dioxins, on the human body and have published the results in scientific journals. For example, I am currently coordinating a research effort in Vietnam to follow up the effects on the population of exposure to Agent Orange and dioxins. I was an advisor to the World Health Organization with respect to dioxins in human breast milk. I also served as an expert consultant to the United States Environmental Protection

Agency on the human health effects of exposure to polychlorinated dibenzofurans, and I directed several Agent Orange studies on U.S. Vietnam Veterans for the Commonwealth of Massachusetts.

In 1981, after a PCB transformer fire in the city of Binghamton, New York, my colleagues and I were the first to discover that such fires and explosions could lead to contamination of the work place with PCBs, dioxins, and polychlorinated dibenzofurans and we were the first to measure the fat and blood dioxin and dibenzofuran levels after such exposure on American workers, especially including determination of elevated levels of dioxins and dibenzofurans in workers' blood and fat tissue as compared with the general population. I have published a number of papers on our scientific and medical findings in the journals listed in my curriculum vitae.

Additional examples, and a list of the articles I have published, are listed in my C.V., which I have attached to this letter.

I have reviewed the Government Accounting Office Report to Congress on the PCB spill at the Guam Naval Power Generating Plant. Based on that review, and based on my professional judgment, it seems to me that at least some of the citizens of Guam who were called in to clean up the results of that spill appear to have been exposed to dangerous levels of PCBs, dioxins and polychlorinated dibenzofurans. Further, if these individuals brought these dangerous and highly toxic substances home to their families on their work clothes and shoes, which is quite

possible, family members may have also been exposed to these toxic chemicals.

Exposure to PCBs, dioxins, and polychlorinated dibenzofurans can lead to serious health problems. These include:

- Cancers of various types;
- 2. Reproductive system damage including spontaneous abortions and congenital malformations (malformed babies);
- 3. Damage to the immune system, leading to the inability to fight infections or cancer;
 - Liver damage;
- 5. Nervous system damage, which may include neurobehavioral changes, learning disabilities and personality alterations;
- 6. Altered lipid metabolism and elevated triglyceride and cholesterol levels, which, in turn, may lead to increased incidence of myocardial infarctions (heart attacks) or cerebrovascular accidents (strokes);
 - 7. Bleeding disorders; and
- 8. Skin reactions of greater or lesser severity, sometimes with severe pruritus or itching.

I have been asked and have agreed to serve as a medical consultant and an expert witness with respect to the effects of exposure in this instance on the individual workers and their families. In order to do that properly, both for the medical well being of these individuals and for the purposes of

litigation, I will need to conduct a thorough medical screening on the exposed individuals. Particularly because of the expense of determining the levels of dioxins and dibenzofurans and also PCBs in individuals, I estimate that the cost of this initial screening will be somewhat over two thousand dollars (\$2,000.00) per individual. In addition, I will need to determine the extent to which each individual requires periodic, such as yearly, medical monitoring so that the harmful medical effects of such exposure can be identified in a timely fashion in order to decrease the rate of mortality, morbidity, or suffering. Such medical monitoring can run to fifty thousand dollars (\$50,000.00) or higher over the course of an individual's lifetime, depending on the extent of exposure.

What happened at the PITI Power Plant was extremely unfortunate and unnecessary. The individual citizens of Guam, who were paid eight dollars (\$8.00) an hour to clean up this very serious toxic chemical incident, and their families, should not have been exposed to these highly toxic substances. Many of them may well suffer from this exposure in the years to come. With your help, I am ready to attempt to determine the extent of their exposure and the possible harmful effects each of them will face. I will also attempt to determine which persons have high, medium, or low to absent increased body burdens of these chemicals. This should allow classification of some persons where medical surveillance should be most rigorous as well as some where further medical surveillance may not be indicated due to high,

low or absent exposure and intake, respectively, of the toxic chemicals involved in this incident. I will then prepare a thorough medical monitoring program to ensure, as best as medical science is capable of ensuring, that if any of these individuals develop medical problems as a result of their exposure they can receive prompt medical attention with appropriate care to decrease preventable deaths and to otherwise diminish suffering.

Arnold Schecter, M.D., M.P.R. Professor of Preventive Medicine College of Medicina State University of New York Health Science Center

88 Aldrich Avenue Binghamton, New York 13903

amold Schutte

at Syracuse

ARNOLD J. SCHECTER, M.D., M.P.H.

CURRICULUM VITAB

Office Address:

Department of Preventive Medicine State University of New York Health Science Center/Syracuse Clinical Campus at Binghamton 88 Aldrich Avenue Binghamton, NY 13903 (607) 770-8521 or (607) 770-8522 FAX: (607) 770-8623

Home Address:

88 Aldrich Avenue Binghamton, NY 13903 (607) 772-6067

Marital Status:

Married, three children

Fellow:

American College of Preventive Medicine American College of Physicians

Diplomate:

American Board of Preventive Medicine, 1976

Medical Licensure:

Kentucky (License #5276)
New York (License #115690)
New Jersey (License #32199)

Academic Position:

Professor

Department of Preventive Medicine

SUNY Health Science Center

College of Medicine

Clinical Campus at Binghamton

Medical Staff Positions:

Our Lady of Lourdes Hospital 169 Riverside Drive Binghamton, NY 13905

United Health Services:

Wilson Memorial Hospital

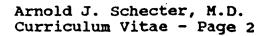
Harrison Street

Johnson City, NY 13790

and Binghamton General Hospital

Mitchell Avenue

Binghamton, NY 13903



Educational & Professional

| Chronology: | |
|--------------------|---|
| 1951 - 1953 | Shimer College of the University of Chicago Mount Carroll, Illinois |
| 1954 - 1957 | University of Chicago, Chicago, Illinois B.A. (Liberal Arts) 1954 B.S. (Physiology - Neurophysiology) 1957 |
| 1958 - 1962 | Howard University Medical School, Washington, D.C. M.D. 1962 |
| 1962 - 1966 | Postdoctoral Research Fellow, Harvard Medical School, Boston, Massachusetts, 1962-64 National Institute of Health Department of Anatomy (Renal Ultrastructure with Dr. Don Wayne Fawcett) |
| 1964 - 1965 | Instructor, Department of Medicine, Renal Unit and Clinical and Research Fellow Harvard Medical School and Massachusetts General Hospital, Boston, Massachusetts (with Dr. Alexander Leaf) |
| 1966 | Beth Israel Hospital, Boston, Massachusetts Surgical Intern, (January 1 - December 31 Dr. Jacob Fine, Chairman) |
| 1967 - 1969 | Captain, then Major, United States Army, Fort Knox, Kentucky Aviation Medical Officer, Course in Aviation Medicine, 1968 |
| 1969 - 1970 | General Practitioner, West Point, Kentucky and Senior Aviation Medical Examiner (Federal Aviation Administration designee) |
| 1970 - 1971 | Executive Director Floyd County Comprehensive Health Services Program, Inc., Floyd County, Kentucky, |
| 1971 - 1972 | Director, Inpatient Rehabilitation Center, |

Kentucky

1972 - 1975

Assistant Professor, Division of Alcoholism and Drug Dependence, Dept. of Psychiatry, Drug and Alcohol Abuse Treatment Programs State University of New York, Downstate Medical Center (State University of New York Health Science Center at Brooklyn and Kings County Addictive Disease Hospital, Brooklyn, New York

Drug and Alcohol Rehabilitation Program, Kentucky Region Eight Mental Health and Mental Retardation Board, Inc., Louisville,

Educational & Professional Chronology (continued):

| 1 | 9 | 7 | 2 | _ | 1 | 9 | 7 | 5 |
|---|---|---|---|-----|---|---|---|---|
| (| C | 0 | n | tin | u | e | đ |) |

Director of Clinical Research in Drug Abuse Coordinator and Faculty Member, Career Teacher Training Center in Drug and Alcohol Dependence Career Teacher Training Center

1974 - 1975

Student, Columbia University School of Public Health, M.P.H., 1975

1975 - 1979

Clinical Associate Professor, Department of Preventive Medicine and Community Health, College of Medicine and Dentistry of New Jersey, New Jersey Medical School, Associate Director, Office of Primary Health Care Education, Office of the Dean, 1976-79

1978

Student, Occupational Medicine Course, Asbestos, Mt. Sinai Medical Center, New York, New York

1979

Student, Environmental Medicine and Environmental Health Course, Postgraduate School, New York University Medical Center

1979

Student, Occupational Medicine Course, University of Illinois Medical Center, Chicago, Illinois

1979 -

Professor, Deptartment of Preventive Medicine, Clinical Campus at Binghamton, SUNY Health Science Center/Syracuse, College of Medicine, Binghamton, New York

1979 - 1981

Commissioner of Health, Broome County Health Department, Binghamton, New York, Medical Director, Home Health Nursing Service, Acting Director of Nursing Homes, Broome County Nursing Homes, Binghamton, New York

1982

Student, Occupational Medicine Courses: University of Illinois Medical School, Chicago, Illinois and Mt. Sinai Medical Center, New York, New York

Recent National and International Scientific Panels

Planning Committee, International Symposium on Dioxins and Related Chemicals, 1984, 1985.

Contributor to "Bioavailability of Dioxins," <u>U.S. Environmental</u>

<u>Protection Agency 1984 Workshop Proceedings</u>, Government Printing Office, 1985.

Peer Review Committee (Expert Panel), <u>Biological Health Assessment Document</u>, Polychlorinated Dibenzofurans, draft document 1986; final document pending 1988.

Advisor to the World Health Organization of the United Nations on Chlorinated Dioxins and Related Chemicals in Human Breast Milk; Meeting at Oslo, Norway, October 1986, Copenhagen, Denmark, November 1986 and February 1988.

Principle Investigator

Methadone Maintenance Program (Co-investigator), Louisville, Kentucky, 1971-72

Naltrexone, Endo Laboratory, F.D.A. IND #9301, 1972-78

Naltrexone, National Institute on Drug Abuse, F.D.A. IND #10,134, 1973-75

1-alpha-acetyl methadol, U.S. Special Action Office for Drug Abuse Prevention, IND #10,064, 1973-75

Bismuth Subsalicylate in the Treatment of Gastro-Intestinal Distress Related to "Flu Like" Illness, 1982

Recent Academic Committees

Research Committee, 1979 - present

Student Appraisal and Promotions Committee, 1979 - 1980

Search Committee, Department of Preventive Medicine, 1797 - 1980

Educational Policy Committee, 1979 - 1981

Coordinator's Committee, 1979 - 1983

Library Committee, 1982 - 1987

Television Health Feature Advisory Council, SUNY Binghamton, 1980 - 1981

Academic/Professional Memberships

Association of Teachers of Preventive Medicine American College of Epidemiology American College of Preventive Medicine (Fellow) American College of Physicians (Fellow) Association of American Medical Colleges American Association for the Advancement of Science American Public Health Association New York Academy of Sciences Electron Microscopy Society of America American Society for Cell Biology American Occupational Medicine Association New York State Occupational Medicine Association Broome County Medical Society New York State Medical Society Society for Epidemiology Research Society for Neuroscience International Narcotics Research Association

Recent Civic Activities

Broome County Nursing Home Advisory Board ad hoc
Broome County Mental Health Advisory Board
Broome County Mental Health Advisory Board Subcommittee and Drug Abuse
and Alcohol Abuse
Broome County Health Department: Home Health Advisory Committee ad hoc
Broome County Health Department: Medical Advisory Committee ad hoc
Broome County Health Department: Advisory Board of Health ad hoc
Broome County Health Department: Medical Director, Home Health Agency
Broome County Medical Society: Board of Directors
Broome County Medical Society: Public Health Committee
Broome County Water Resources Commission, ad hoc appointee
New York-Pennsylvania Health System Agency Board of Directors
New York-Pennsylvania Health System Agency Planning Committee
Our Lady of Lourdes Hospital Hospice Advisory Board
Our Lady of Lourdes Hospital Hospice Finance Committee

Civic Activities (continued)

Central New York Affiliate of the New York State Public Health Association

Planned Parenthood of Broome and Chenango Counties, Inc., Medical Advisory Committee

Broome County Chamber of Commerce

Broome County Chamber of Commerce Professional Committee

State University of New York, Binghamton, Speakers' Bureau

Twin Tiers Home Health Nursing Service Board of Directors

Journals Edited

Cofounder and Associate Editor, The American Journal of Drug and Alcohol Abuse. New York, New York: Marcel Dekker, Inc., 1973-1978.

Editorial Board, The American Journal of Drug and Alcohol Abuse. New York, New York: Marcel Dekker, Inc., 1978-present.

Editorial Advisory Board, <u>Substance and Alcohol Actions/Misuse</u>. Elmsford, New York: Pergamon Press, Inc., 1979-present.

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Books

Schecter, A. (ed.). <u>Rehabilitation Aspects of Drug Dependence</u>. Cleveland, Ohio: CRC Press, 1977.

Schecter, A. (ed.). <u>Treatment Aspects of Drug Dependence</u>. West Palm Beach, Florida: CRC Press, 1978.

Schecter, A., Alksne, H. and Kaufman, E. (eds.). <u>Drug Abuse: Modern Trends.</u> <u>Issues and Perspectives</u>. New York, New York: Marcel Dekker, Inc., 1978.

Schecter, A., Alksne, H., and Kaufman, E. (eds.). <u>Critical Concerns in the Field of Drug Abuse</u>. New York, New York: Marcel Dekker, Inc., 1978.

Schecter, A. (ed.). <u>Biomedical Issues in Drug Abuse</u>. Volume I, Proceedings 1978 National Drug Abuse Conference. New York, New York: Plenum Publishing Co., 1981.

Schecter, A. (ed.). <u>Sociocultural Issues in Drug Abuse</u>. Volume II, Proceedings 1978 National Drug Abuse Conference. New York, New York: Plenum Publishing Co., 1981.

<u>Articles</u>

- 1. Schecter, A.J. and D.W. Fawcett. (Abstract) "Intracellular microtubules in mammalian podocytes," In: <u>Anat. Record</u>, <u>148</u>:2, 332, 1964.
- Schecter, A.J. (Abstract) "Fine structure studies of the urinary bladder of bufo marinus," In: <u>Anat. Record</u>, <u>151</u>:3, 412, 1965.
- 3. Schantz, A. and A.J. Schecter. (Abstract) "Iron hematoxylin and safranin O staining of epon embedded sections," In: <u>Anat. Record</u>, 151:3, 454, 1965.
- 4. Schantz, A. and A.J. Schecter. (Abstract) "The uptake of electron opaque markers in epithelial and mesothelial cells of the urinary bladder of bufo marinus," In: <u>J. Cell Biol.</u>, <u>27</u>:94A, 1965.
- 5. Schantz, A. and A.J. Schecter. "Iron hematoxylin and safranin O as a polychrome stain for epon sections," <u>Stain Tech.</u>, 40:27, 1965.
- 6. Schecter, A.J. and M.J. Schecter. (Abstract) "A possible variation in unit membrane substructure," In: <u>J. Applied Physics</u>, <u>37</u>:329, 1966.
- 7. Schecter, A.J. (Abstract) "The occurrence and distribution of intracellular microtubules in the mammalian kidney," In:

 Proceedings. Third International Congress of Nephrology, 1966.
- 8. Schecter, A.J. "Variations in unit membrane structure," 6th International Congress for Electron Microscopy Proceedings, II, Tokyo, Japan: Maruzen Publishing Co., 397-398, 1966.
- 9. Schecter, A.J. "Variations in unit membrane substructure," The Norelco Reporter, XIII, 1966.
- Schecter, A.J. "A different approach to a detoxification center," <u>Proceedings, Fourth National Conference on Methadone Treatment</u>, 539-541, 1972.
- 11. Schecter, A.J. "The inpatient unit reconsidered," <u>Proceedings</u>, <u>National Conference on Methadone Treatment</u>, I:476-481, 1973.
- 12. Schecter, A.J., J. Friedman, and D. Grossman. "Clinical use of naltrexone (EN-1639A). Part I: Efficacy and safety in pilot studies," Amer. J. Drug and Alcohol Abuse, I:2, 253-269, 1974.
- 13. Kreek, M.J., A.J. Schecter, C.L. Gutjahr, D. Bowen, F. Field, J. Queenan and I. Merkatz. "Methadone levels in maternal and neonatal body fluids during maintenance treatment, <u>Amer. J. Drug and Alcohol Abuse</u>, <u>I</u>:3, 409-418, 1974.
- 14. Schecter, A.J. "Consumer acceptance of drug abuse programs: A provider's view," <u>J. Psychedelic Drugs</u>, <u>6</u>:2, 213-223, 1974.
- 15. Schecter, A.J. and D. Grossman. "Naltrexone in a clinical setting: Preliminary observations," <u>Proceedings</u>, <u>National Academy of Sciences</u>

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- 16. Schecter, A.J. and F. Kauders. "Methadone and 1-alpha-acetylemethadol in a treatment program in Brooklyn," Amer. J. Drug and Alcohol Abuse, II:3/4, 331-339, 1975.
- 17. Schecter, A.J. "Clinical use of naltrexone (EN-1639A). Part II: Experience with the first 50 patients in a New York treatment clinic," Amer. J. Drug and Alcohol Abuse, II: 3/4, 433-442, 1975.
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- 19. Schecter, A.J. and D. Grossman. "Experience with Naltrexone: a suggested role in drug abuse treatment programs," <u>Developments in the Field of Drug Abuse</u>. <u>Proceedings</u>. 1974 of the National Association for the Prevention of Addiction to Narcotics, Senay, E., Shorty, V., and Alksne, H. (eds.). Cambridge, Massachusetts: Schenkman Publishing Company, Inc., 754-766, 1975.
- 20. Schecter, A.J. (Abstract) "The career teacher training program for medical school faculty members and its impact on the training of American physicians in drug and alcohol abuse," In: <u>Developments in the Field of Drug Abuse</u>, <u>Proceedings</u>, <u>1974 of the National Association for the Prevention of Addiction to Narcotics</u>, Senay, E., Shorty, V., Alksne, H. (eds.). Cambridge, Massachusetts: Schenkman Publishing Company, Inc., 1110-1111, 1975.
- 21. Schecter, A.J. "Naltrexone: Observations with fifty patients during 14 months," <u>Proceedings, National Academy of Science, Committee on Problems of Drug Dependence</u>, 533-542, 1975.
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- 23. Schecter, A., "An overview of the use of narcotic antagonists in the rehabilitation of opiate dependent persons," <u>Critical Concerns in the Field of Drug Abuse</u>, <u>Proceedings of the Third National Drug Abuse Conference</u>, <u>Inc.</u>, <u>New York</u>, <u>1976</u>, Schecter, A., Alksne, H. and Kaufman, E., (eds.) New York, New York: Marcel Dekker, Inc., 1260-1268, 1978.
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 <u>Drug Dependence and Alcoholism. Vol. I. Biomedical Issues</u>, Schecter, A. (ed.). New York, New York: Plenum Press, 973-980, 1981.
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 <u>Toxicol.</u>, 30:199-205, 1983.
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 "Ultrastructural alterations of liver mitochondria in response to dioxins, furans, PCB's and biphenylenes," Banbury Report 18:
 Biological Mechanisms of Dioxin Action, Cold Spring Harbor Laboratory: Banbury Center Publications, 177-190, 1984.

BIBLIOGRAPHY (continued) Articles

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- 46. Ryan, J.J., A. Schecter, R. Lizotte, W.F. Sun and L. Miller. "Tissue distribution of dioxins and furans in humans from the general population," <u>Chemosphere</u>, <u>14:</u>6/7, 929-932, 1985.
- 47. Schecter, A., J.J. Ryan, R. Lizotte, W.F. Sun, L. Miller, G. Gitlitz and M. Bogdasarian. "Chlorinated dibenzodioxin and dibenzofurans in human adipose tissue from exposed and control New York State patients," Chemosphere, 14:6/7, 933-937, 1985.
- 48. Schecter, A., T.A. Gasiewicz, H. Eisen and F. Schaffner.
 "Ultrastructural alterations in liver cells of humans, rats and mouse hepatoma cells in response to 2,3,7,8-tetrachlorodibenzo-p-dioxin and related compounds," Chemosphere, 14:6/7, 939-944, 1985.
- 49. Schecter, A., T. Tiernan, M. Taylor, G.F. VanNess, J.H. Garrett, D.J. Wagel, G. Gitlitz and M. Bogdasarian. "Biological markers after exposure to polychlorinated dibenzo-p-dioxins, dibenzofurans, biphenyls and biphenylenes. Part I: Findings using fat biopsies to estimate exposure, "Chlorinated Dioxins and Dibenzofurans in the Total Environment II, Keith, L., Rappe, C., and Choudhary, G. (eds.). Stoneham, Massachusetts: Ann Arbor Science, Butterworth Publishers, 215-245, 1985.
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 "Biological markers after exposure to polychlorinated dibenzo-p-dioxins, dibenzofurans, biphenyls and related chemicals. Part II: Ultrastructural characterization of human liver biopsies,"

 Chlori-nated Dioxins and Dibenzofurans in the Total Environment, II, Keith, H., Rappe, C., and Choudhary, G. (eds.). Stoneham, Massachusetts: Ann Arbor Science, Butterworth Publishers, 247-265, 1985.
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 <u>Environmental Protection Agency 1984 Workshop Proceedings</u>, Courtney, D. (ed.). Government Printing Office.
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JPC

james p. castro

P.O. Box 20731 GMF, Guam 96921 (671) 472-3429

June 12, 1989

Honorable Ted S. Nelson Chairman, Committee on General Governmental Operations Twentieth Guam Legislature 163 Chalan Santo Papa Street Agana, Guam 96910

Re: Testimony in Support of Bill No. 666

Dear Mr. Chairman:

For the record, my name is James P. Castro, a resident of Barrigada and a member of the Barrigada Municipal Planning Council. I am here to submit testimony in support of Bill No. 666, "An act to appropriate funds and establish an Employees' PCB Recovery Fund."

Although I am not an employee of the Navy Public Works Center, I had the opportunity to tour under strict supervision the Piti Power Plant. This tour, Mr. Chairman, occurred sometime in August of 1987. The experience I went through I will never forget. This supervised tour proved that the Piti Power Plant was indeed contaminated, and that employees were not being properly informed, nor were they properly trained to respond to such a cleanup program.

Through your efforts and that of others, a General Accounting Office team was finally assigned to investigate the PCB accident at the Piti Power Plant. The specific concerns at the time was the fact that Navy lacked the necessary personal protective equipment (PPE) for use by the employees, and, Navy's adequacy to properly manage and supervise the cleanup efforts.

In 1976 Congress recognized that employees must be protected from exposure to toxic substances. For this reason, Congress enacted the Toxic Substances Control Act. The intent of this Act was to regulate toxic substances including PCBs, dioxins, and furans. Furthermore, the U.S. Environmental Protection Agency (U.S. EPA) has, on many occasions implemented regulations for the use, management, disposal, and cleanup of PCBs. Also, the Occupational Safety and Health Administration (OSHA) has issued rules covering employee protection requirements when working in hazardous areas or for cleaning up of chemical spills. Another rule promulgated by OSHA is the Hazardous Waste Operations and Emergency Response Rules, this, Mr. Chairman, can be found in (29 C.F.R. 1910) under the Superfund Amendments and Reauthorizations Act of 1986 (P.L. 99-499).

Senator Ted S. Nelson June 12, 1989 Page 2

More importantly, let me point out that the interim final rule, covering employee protection requirements for workers engaged in hazardous waste operations, including emergency and post-emergency response to hazardous substance incidents, was issued on December 19, 1986 and became effective on March 16, 1987.

Federal agencies including Department of Defense components such as the Navy, must comply with the OSHA rules and regulations.

At this time, I would like to quote a paragraph from the GAO Report:

"The Navy did not have all of the recommended personal protective equipment in Guam at the time of the accident. The protective equipment worn varied widely from none at the time of the spill to full protection at the time of GAO's review. As cleanup work continued, protective equipment was generally reduced for all workers except cleanup personnel. However, when the more potent dioxins and furans were discovered, the equipment was changed back to full protection. Occupational Safety and Health Administration officials and others expressed concern about the possibility that inadequate protection was provided by the type of equipment employees wore after the spill occurred until they started wearing full-protective equipment."

In closing, Mr. Chairman, let just say that this legislation directly impacts on the general welfare of these employees and their families and for this reason I recommend that the amount to be appropriated be changed to reflect the seriousness of this problem. Personally, I would suggest that this Legislature appropriate \$1 million to the Fund. I commend you and the co-sponsors of this legislation, and respectfully request that the members of this Committee act favorably and submit your report to the Legislature recommending passage of Bill No. 666 as soon as possible.

Thank you for the opportunity, and should you have any questions, I will be more than happy to respond to them.

JAMES P. CASTRO

Sincerely.



U.S. PACIFIC FLEET COMMANDER NAVAL FORCES MARIANAS FPO SAN FRANCISCO 96630-0051

2 3 MAY 1989

Dear Senator Nelson:

I note with great concern the matter raised in your May 18, 1989, letter that there may be employees at the Navy Public Works Center, Guam, who have been exposed to hazardous substances without benefit of medical monitoring. For a number of years we have made available a medical monitoring program under such circumstances to all of our employees. As you know, there are currently over 251 PWC employees in this program.

I do need your help in identifying any employees who may not taken advantage of this well-publicized program for whatever reason. Please provide me the names and work centers of these people so that I may have each one of them contacted and again made aware of the ongoing medical screening program and their entitlement to use it. Additionally, please provide the names and addresses of any individuals outside the Navy employment system who currently believe they may have been exposed to hazardous substances while employed by the Navy.

Thank you for your assistance.

Sincerely,

Γ. **W**. JOHNSON

Real Admiral, U. S. Navy

Senator Ted S. Nelson 163 Chalan Santo Papa Agana, Guam 96910



U.S. PACIFIC FLEET COMMANDER NAVAL FORCES MARIANAS FPO SAN FRANCISCO 96630-0051 0 8 JUN 1989

Dear Senator Nelson:

Thank you for your letter of June 2, 1989, informing me of the public hearing to be held on Guam Bill No. 666. As you may know, a claim against the United States has been filed by various employees of the Public Works Center for alleged damages resulting from the May 26, 1987, PCB spill at the Piti Power Plant. It would be inappropriate for me or any other Navy official to comment on that incident during the pendency of the claim. Accordingly, no Navy official will attend the public hearing, nor will any written comments be submitted.

I am concerned that you have not responded to my May 23, 1989, letter requesting identification of those employees of whom you claim to be aware who allegedly have not participated in the on-going PCB medical monitoring program. If there are such individuals it is vitally important you identify them at once. My staff has repeatedly called your office without response. Please give this matter your personal attention.

Sincerely.

T.J. JOHNSON

Rear Admiral, U.S. Navy

Senator Ted S. Nelson Guam Legislature 163 Chalan Santo Papa Agana, Guam 96910 Part of 1:1



CHAIRMAN
Committee on General
Governmental Operations

163 Chelen Santo Pape, Agene, Guern 98918 Telephone: (571) 472-3428/29/38

May 18, 1989

Received By B. Harre
Time 0850

Date 22 May 89

RADM Thomas J. Johnson Commander Naval Forces Marianas United States Navy FPO San Francisco 96630-0051

Dear Admiral Johnson:

In my continuing research on the issues relating to the handling of PCB's and other hazardous materials by the Navy Public Works Center, Guam, I have learned that there are other groups of employees who have been handling such hazardous materials for a period of years that were not involved in the clean-up of the spillage at the Piti Power Plant. I refer specifically to those employees who are assigned to the transformer and maintenance units of PWC.

These employees were tasked with the work of removing and draining PCB-contaminated oil from Navy transformers even prior to the problems confronted at the Piti Power Plant. Because these employees were not involved with the accident and clean-up efforts at the Plant, they did not receive the benefits of the medical examinations and continuous monitoring program provided for those employees who were involved in efforts at the Plant.

In discussions with these individuals, I have learned that there have been health related problems, including tragedies such as death resulting from cancer and related ailments within their families. These individuals have never suspected that these health problems may have been caused by or related to exposure to the carcinogenic agents in PCB-contaminated oil used as cooling fluid for power transformers. I have received information indicating that the handling of PCB contaminated oil in the maintenance and transformer shops, prior to the accident at the Piti Power Plant and prior to Navy being required to provide and enforce personal protective equipment requirements and procedures, was performed as if there were no health hazards or dangers involved.

Because of the findings of the General Accounting Office's study and because of the health hazards related to the handling of PCB's, dioxins and furans, I am requesting that the employees of PWC who were

RADM Thomas J. Johnson May 19, 1989 Page 2

exposed to PCB (dioxins and furans) even prior to the problems experienced at Piti Power Plant, and their families be given the benefit of complete medical examinations and the continuous monitoring programs now being afforded the employees involved with the accident at the power plant. I am further requesting that this program be initiated immediately as the emotional stress and tension being caused by this problem is quickly becoming problematic.

· Just 1:

In talking with many of the individuals involved with the Piti Power Plant problem, I have noticed that as valiantly as these employees try to hide it, there is fear and feelings of uncertainty among themselves. They do not deserve this and their many years of service to the Navy must dictate that they be provided with whatever may be necessary to allay their fears and consternation; human compassion demands no less.

Sincerely,

cc: Governor of Guam

Congressman Ben Blaz

Congresswoman Pat Schroeder

TWENTIETH GUAM LEGISLATURE COMMITTEE ON GENERAL GOVERNMENTAL OPERATIONS WITNESS SHEET

Bill No. 666 - An act to appropriate the sum of One Hundred Thousand Dollars to assist PCB-affected employees at the Public Works Center, Navy, Guam, and to establish an Employees' PCB Fund. 4.30 a.m.; Monday, June 12, 1989; Legislative Session Hall

| NAME OF WITNESS (Please print clearly) | AGENCY/DEPT. REPRESENTING (if representing Self, a Firm, etc., please indicate) | STATEMENT (W or O)* | TESTIM C [Check (\sellow For or Ag | ') if] |
|--|---|------------------------|--|--------|
| Dr. Arnold J. Schecter, M.D. | AFGE Loral 1689, INT. | <u>w/o</u> | | |
| Atty. Randy Cuntife | ; M.P.A Self | | | |
| Eladio T. Figueroa | Employee PWC | 0 | | |
| Henry Goss | Pwc Transportation | <u> </u> | | |
| Man (. Mis Lery 1thy | Cramer & Camieson | | | |
| Ben Mc Conaughy | For ler, Reprova Shofel | man d | | |
| Manuel Tenorio Jeaguin J.D. Lujan | PWC Transportation PWC Utilities Dopt. | | 1 | |
| Joseph Garrido | PWC Maintenance | 0 | 7 | |
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^{*} Written or Oral

GAO

Report to Congressional Requesters

September 1988

TOXIC SUBSTANCES

PCB Spill at the Guam Naval Power Generating Plant







United States General Accounting Office Washington, D.C. 20548

National Security and International Affairs Division

B-213706

September 22, 1988

The Honorable Ben Blaz

The Honorable Mike Synar Chairman, Subcommittee on Environment, Energy and Natural Resources Committee on Government Operations

The Honorable Ron de Lugo Chairman, Subcommittee on Insular and International Affairs Committee on Interior and Insular Affairs

The Honorable Robert J. Lagomarsino Ranking Republican Member Subcommittee on Insular and International Affairs Committee on Interior and Insular Affairs House of Representatives

This report responds to your request that we evaluate the Department of the Navy's efforts to clean up the PCB spill at its Piti Power Plant, Public Works Center, Guam.

As arranged with your Offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from its issue date. At that time we will send copies to the chairmen of appropriate committees; the Secretaries of Defense and the Navy; the Director, Office of Management and Budget; and other interested parties upon request.

Frank C. Conahan

Assistant Comptroller General

Purpose

On May 26, 1987, about 20 gallons of polychlorinated biphenyls (PCBS), a toxic substance that is readily absorbed in the body and accumulates until it reaches harmful levels, were released under pressure by a transformer inside the Piti Power Plant at the Navy Public Works Center, Guam. A greater concern was that such a release of PCBs could also create the more potent toxins—dioxins and furans.

At the request of Delegate Ben Blaz and subsequent requests from cognizant subcommittees, GAO investigated the release of the PCBs. Specific areas of concern included the causes of the PCB release, the precautions taken to protect employees from PCBs and other dangerous chemicals, the adequacy of Navy cleanup, the training provided to plant operators and cleanup crews, and the availability of personal protective equipment.

Background

The Toxic Substances Control Act of 1976 regulates toxic substances including PCBS, dioxins, and furans. The Environmental Protection Agency has issued implementing regulations for the use, management, disposal, and cleanup of PCBs. The Occupational Safety and Health Administration has issued rules covering employee protection requirements when working in hazardous areas or for cleaning up chemical spills.

Results in Brief

At the time of the release, 29 employees were directly exposed to the PCB-contaminated oil. The Navy initiated cleanup efforts almost immediately. The majority of the workers on the emergency response crew had received some training on the proper procedures to use during a hazardous substance spill. However, the Navy did not (1) immediately test the contaminated area for dioxins and furans, (2) provide adequate personal protective equipment, and (3) provide hazardous materials management training to all the plant operators or other support personnel assisting in the cleanup. Therefore, the Navy may not have taken all of the required precautions to protect its employees. The Navy discontinued PCB cleanup on July 14, 1987, when the presence of dioxins and furans was confirmed. The Naval Hospital in Guam is monitoring 251 employees who may have been affected.





GAO's Analysis

Emergency Response and Cleanup

On May 26, 1987, the Public Works Center emergency response team entered the plant to assess the extent of contamination. After consultation with the Public Works Center's Safety Officer and the hospital's Occupational Health and Preventive Medicine personnel, the Public Works Center's emergency response team and the cleanup crews entered the contaminated area before determining whether or not there was a potential for dioxin and furan contamination. As a result, the response team and the cleanup crews may have unnecessarily encountered contamination without proper protection.

Dioxins and Furans

Public Works Center officials did not recognize that pressurized releases of PCBs are considered a fire-related incident when heat is generated. Navy instructions, available in Guam, indicated that such a pressurized release could generate enough heat so that the more potent dioxins and furans could be generated.

Training

A majority of the workers on the emergency response crew had received some training on the procedures to use during a PCB spill. However, other individuals, including plant operators who helped during the cleanup, had very little or no training on the dangers of PCBs and how to respond to a PCB spill. Because they had not had proper training, Navy employees at Piti Power Plant were contaminated with PCBs, and it is possible that they may also have been contaminated with dioxins and furans.

Protective Equipment

The Navy did not have all of the recommended personal protective equipment in Guam at the time of the accident. The protective equipment worn varied widely from none at the time of the spill to full protection at the time of GAO's review. As cleanup work continued, protective equipment was generally reduced for all workers except cleanup personnel. However, when the more potent dioxins and furans were discovered, the equipment was changed back to full protection. Occupational Safety and Health Administration officials and others expressed concern about the possibility that inadequate protection was provided by the type of equipment employees wore after the spill occurred until they started wearing full-protective equipment.





Elimination of PCB Transformers

In May 1986, before the spill, the Chief of Naval Operations directed all major commands to replace PCB equipment in poor condition or with potential for serious health, environmental, or mission impact. As of December 1986, there were 65 PCB transformers at the Naval Complex in Guam. The Public Works Center in Guam set a schedule to replace all PCB equipment by fiscal year 1991 at a cost of about \$2.9 million. The transformer that leaked the PCBs, one of the two largest at the Center, was to be replaced in fiscal year 1989 at a cost of about \$51,000. As a result of the spill from this transformer, the Navy will spend about \$6 million to clean up the site.

Medical Monitoring

The Navy has included in its medical monitoring program 251 employees who were in the plant at the time of the spill or who may have been contaminated in cleaning activities or the continued operation of the plant. Of the 66 employees in the plant when the PCB-laden oil was released, 50 were examined within 3 days at the Naval Hospital. The other 16 reported to the hospital at a later time. Occupational Safety and Health Administration regulations require that baseline medical examinations be given to all employees before they start work as part of the cleanup crew in a hazardous area designated for cleanup and annually thereafter and also at the time of an emergency, such as a spill. However, over 50 employees involved in the cleanup had not had a medical examination for over 1 year before the spill and did not receive a baseline medical examination until more than 80 days after the accident. As a result, the Navy did not know the medical condition of those employees at the time of the accident.

After the spill, the Navy established a medical monitoring program to include all employees who were directly exposed, participated in the cleanup, or, in some way, may have been subsequently affected by the spill.

Recommendations

GAO recommends that the Secretary of the Navy take steps to ensure that

- · the required training for cleanup crews and plant operators is provided,
- the required personal protective equipment is included in the Navy's supply inventory, and
- the requirement that employees who work in hazardous conditions receive baseline examinations before entry into the workplace and receive regular examinations is observed.





Agency Comments

The Department of Defense, the Environmental Protection Agency, and the Occupational Safety and Health Administration generally concurred with GAO's findings and recommendations. The Department of Defense described actions it is taking to implement the recommendations.

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Abbreviations

| DOD | Department of Defense |
|-------|---|
| DRMO | Defense Reutilization and Marketing Office |
| EPA | Environmental Protection Agency |
| GAO | General Accounting Office |
| KVA | kilovolt amperes |
| NEESA | Naval Energy and Environmental Support Activity |
| NIOSH | National Institute for Occupational Safety and Health |
| OSHA | Occupational Safety and Health Administration |
| PCB | polychlorinated biphenyls |
| PPE | personal protective equipment |
| PWC | Public Works Center |
| RCRA | Resource Conservation and Recovery Act |
| TSCA | Toxic Substances Control Act |





Introduction

Polychlorinated biphenyls (PCBS) are a class of fire-resistant chlorinated hydrocarbon fluids that have been used mainly as insulators or heat transfer liquids in large electrical transformers and capacitors. Because of their chemical stability, PCBS tend to persist in the environment. PCBS are considered a chronic toxic hazard, since they are readily absorbed and retained by human and animal tissue. PCBS are taken into the body through breathing, direct skin contact, or by ingesting food or drinking water. The exposure to PCB vapors is the most dangerous mode of contact. PCBS accumulate in the body until they reach harmful levels. Short-term effects of PCB exposure may include development of skin problems such as chloracne and hyperpigmentation. Long-term, low-level exposure to PCBS has been observed to cause minor liver damage and possible impairment of the nervous system. In addition, reproductive and carcinogenic effects have been found in animals. Because PCBS may cause cancer in animals, they are considered a suspect human carcinogen.

A greater concern was the danger that polychlorinated dibenzo.p.dioxins and polychlorinated dibenzo furans, known simply as dioxins and furans, could be generated. Dioxins and furans, which are more potent than PCBs, can be generated when there is a fire-related or pressurized release of PCBs in which heat is generated. These chemicals also can cause the same medical problems as PCBs.

Legislation

The Toxic Substances Control Act of 1976 (TSCA) regulates the production of toxic substances, including PCBs. It provides for the protection of the environment by requiring that electrical equipment containing PCBs be tested and their use be restricted. The act also prohibits the manufacture of PCBs. The Environmental Protection Agency (EPA) has established prohibitions of, and requirements for, the manufacture, processing, distribution, use, disposal, storage, and marking of PCBs and PCB items. In addition, on April 2, 1987, EPA issued regulations implementing TSCA policy for the cleanup of spilled PCBs, which became effective after May 4, 1987. Before this policy, each EPA regional administrator had the authority to enforce adequate cleanup of PCB spills. Federal agencies, including the Department of Defense (DOD), must comply with TSCA.

The Occupational Safety and Health Administration (OSHA) issued Hazardous Waste Operations and Emergency Response rules (29 C.F.R. 1910) under the Superfund Amendments and Reauthorization Act of 1986 (P.L. 99-499). The interim final rule, covering employee protection requirements for workers engaged in hazardous waste operations,



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including emergency and post-emergency response to hazardous substance incidents, was issued on December 19, 1986, and became fully effective on March 16, 1987. Federal agencies, including DOD components such as the Navy, must comply with the OSHA rules and regulations.

The Spill

At 3:22 p.m. on May 26, 1987, about 20 gallons of oil containing PCBS were released by a rupture of the termination box of a 2,000 kilovolt amperes (KVA) transformer located inside the Piti Power Plant at the Navy Public Works Center (PWC), Guam. There was no fire associated with this release. The exact cause of the spill is unknown, but it is suspected that the cause was low-level arcing due to a breakdown in the dielectric strength of the PCB insulating fluid with a gradual increase in pressure.

Importance of Piti Power Plant

The Navy's Piti Power Plant, one of three primary electrical generating facilities, generates about 66 megawatts, or about 30 percent of the electricity used in Guam. When all three plants are operating at capacity, there is sufficient electricity to meet the island's demands. However, there have been frequent and long durations of load sharing within the power grid because portions of the generating system have been inoperative. Everyone on the island, including the Navy, is usually operating in a condition in which there is no excess capacity. Because of the electrical load and the limited available generating capacity, the Navy did not shut the plant down.

Objective, Scope, and Methodology

In a September 24, 1987, letter, Delegate Ben Blaz requested that we investigate the Navy's actions concerning the release of PCBs at the Piti Power Plant on May 26, 1987. Because he was concerned that the Navy may not have taken the necessary precautions to protect employees from PCBs and other dangerous chemicals, he wanted our investigation to focus on the following questions:

- Is the Navy's cleanup effort in accordance with accepted standards as provided by existing laws and regulations?
- What caused the transformer to rupture, and how many of these transformers are in the Navy's inventory?
- Has the Navy had similar experiences, and, if so, is the Navy following the same cleanup procedures?



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- Has the Navy revised its procedures to incorporate the lessons learned as a result of the Piti Power Plant PCB spill, such as including a test for dioxins and furans at the time of the accident?
- Does the Navy have the necessary equipment and facilities at the plant to protect its employees from contamination and undue long-term health risks?
- Are there any dangers being encountered by employees presently working in the plant?
- Have the employees of the plant been fully alerted of their exposure to these highly toxic chemicals and are they receiving the required training to cope with the problem?
- · Are the employees subject to a higher medical risk?
- What tests are being made on employees and who is doing them?
- Why did it take so long to contract for testing, analyzing, and studying what needs to be done?
- What plans has the Navy made for disposing of the waste?
- What still needs to be done to clean up the plant, and when will the effort be contracted for and completed?

The Chairman and Ranking Minority Member of the Subcommittee on Insular and International Affairs, House Committee on Interior and Insular Affairs and the Chairman of the Subcommittee on Environment, Energy and Natural Resources, House Committee on Government Operations, also asked us to provide them a report on the investigation.

To accomplish our objective, we reviewed

- EPA, OSHA, and Navy regulations governing PCB spill management;
- the Navy's site specific health and safety plan and medical records for affected workers;
- a Navy Staff Judge Advocate report on the spill and statements made by workers involved in the spill and the cleanup;
- · reports on the effects of PCBS, dioxins, and furans;
- Navy PCB guidance and a Department of Health and Human Services report concerning PCB fire-related incidents;
- contracting procedures used to contract for testing, site characterization, and cleanup of the spill;
- documents showing those individuals who entered the contaminated part of the plant and their hazardous waste training;
- · personal protective equipment inventory records;
- preliminary and final reports prepared by contractors concerning Navy actions taken during the incident;
- EPA and OSHA inspection reports; and



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Introduction

PCB inventory and shipping documents maintained by the Defense Reutilization Marketing Office, which is responsible for the storage and shipment of hazardous waste, including PCBs.

To obtain information from those involved, we interviewed

- officials in Guam at the Navy's Pwc, the Naval Station Medical Clinic, the Naval Supply Depot, the Ship Repair Facility, the Navy's Staff Judge Advocate, the Pwc legal counsel, the Guam EPA, and the Defense Reutilization and Marketing Office;
- PWC employees who were affected, either through direct contamination or by entering the contaminated part of the plant, during the spill incident;
- officials in Honolulu from the Naval Facilities Engineering Command, Pacific Division, about their management of the spill incident, officials from the Defense Reutilization and Marketing Region about the removal of PCB waste from Guam, the OSHA Area Director about his role in the spill, and a doctor from the Veterans Administration about the effects of PCBs and dioxins and furans on humans;
- an EPA official in San Francisco whose responsibilities include the implementation of TSCA programs in Region IX, which includes Guam; and
- EPA officials in Washington, D.C.

We reviewed 104 of the 251 medical records for those individuals being medically monitored. Our criteria for selecting those records to review were as follows. We took a sample of the medical records for the 251 individuals by selecting each seventh one after randomly selecting the starting point. This gave us a sample size of 35. In addition, we examined the medical records for 28 of the 29 employees directly exposed at the time of the accident (7 of these records were also included in our random sample). The Navy could not locate the 29th record.

Next, we also selected all 20 records of the pest control employees involved in the response and cleanup because they are the Navy's hazardous waste handlers and were involved from the beginning of the spill cleanup and, as a result, may have a higher incidence of problems because they came into contact with the PCBs. One of these records was included in the random sample. The final group of medical records we examined were of the 37 employees who worked with or assisted in the cleanup and decontamination effort and whose records indicated they were involved during the first 2 weeks of cleanup. We selected these records because they either could have come in contact with the PCBs

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and were not provided personal protective equipment at first or were in the spill area often. Eight of these individuals were also included in the random sample.

We made our review between October 1987 and March 1988 in accordance with generally accepted government auditing standards.

After the May 26, 1987, PCB spill, the PWC Guam, with assistance and guidance from the PWC Pearl Harbor and Pacific Division of the Naval Facilities Engineering Command, began decontamination and cleanup that continued until the presence of dioxins and furans was confirmed. At this time the Atlantic Division of the Naval Facilities Engineering Command provided assistance. Because these two substances are more potent than PCBs, the Navy stopped the cleanup on July 14, 1987. The Pacific Division contracted with two firms to determine the extent of contamination and the scope of the required cleanup. Training provided to plant operators and cleanup personnel by PWC has not always been timely or complete. PWC stored the waste material at the Defense Reutilization and Marketing Office (DRMO) storage site until it could be shipped.

As of December 1987, the Navy had over 3,800 PCB transformers. PWC Guam issued a schedule in September 1986 for eliminating its 62 PCB transformers by the end of fiscal year 1991. During the last 2 years the Navy has had 10 reported PCB spills, 3 of them in Guam. In two cases, the PWC commander issued a lessons learned document on what to do in case of the next spill. However, because the Navy considers its regulations for responding to PCB spills to be adequate, it does not plan to revise them.

Emergency Response, Testing, and Cleanup

PWC began cleanup of the PCB-contaminated oil at the Piti Power Plant almost immediately after the spill and notified applicable regulatory agencies and Navy organizations. Subsequent testing by a contractor and PWC personnel, which was done to determine the extent of contamination not only defined the boundaries of the contamination but also found the presence of dioxins and furans. Because the more potent dioxins and furans were found, the Navy has contracted for further testing and site characterization. See appendix I for a detailed chronology of events.

Emergency Response

On May 26, after telephoning the Guam EPA about the incident, the PWC emergency response team entered the plant to assess the extent of contamination. After consultation with the PWC Safety Officer and the hospital's Occupational Health and Preventive Medicine personnel, PWC started an emergency cleanup using personnel primarily from the pest control office who have had training in the handling of hazardous waste.

PWC's emergency response team and the cleanup crews entered the contaminated area before PWC determined whether or not there was a potential for dioxin and furan contamination. As a result, the response team and the cleanup crews may have encountered contamination without proper protection. See chapter 3 for more information on personal protective equipment.

On May 27 Guam EPA officials conducted a site survey of the contaminated area of the plant. Also, PWC officials informed the Navy's Environmental Preventive Medicine Unit Six at Pearl Harbor, EPA Region IX, the Coast Guard National Emergency Response Center, and the Navy chain of command of the spill. PWC took samples to determine the boundary of PCB contamination in and out of the plant.

Testing

PCBs

EPA has established a PCB spill cleanup policy that applies to spills occurring after April 2, 1987. According to this policy, restricted access surface areas, such as some of the stairway and walkway areas contaminated at Piti Power Plant, must be cleaned up to a level of 10 micrograms¹ per 100 square centimeters. Low contact areas, such as under the transformers or generators, may be cleaned up to a level of 100 micrograms per 100 square centimeters and encapsulated.

As shown in table 2.1, the results of the 803 test samples taken between May 27 and June 15, 1987, after the spill and during the early cleanup phases, showed higher concentrations of PCBs in the directly contaminated areas of the plant, up to 150,000 micrograms per 100 square centimeters. The 968 PCB test samples, taken between July 1 and July 15, after extensive cleanup had taken place, showed that PCB contamination in the spill area had been reduced. No contamination was found outside of the plant.

¹One microgram equals one-millionth of a gram.

Table 2.1: Comparison of PCB Test Samples Taken Early in the Cleanup Process With Test Samples Taken Later

| | Test results | | | | |
|---------------------------------------|--------------------------------------|--------------------------------------|--|--|--|
| Micrograms per 100 square centimeters | Number of tests May 27 to June 15 | Number of tests July 1 to July 15 | | | |
| 1,001 to 2,000 | 16 | 7 | | | |
| 2,001 to 3,000 | 4 | 4 | | | |
| 3,001 to 4,000 | 2 | 1 | | | |
| 4,001 to 5,000 | 2 | 1 | | | |
| 5,001 to 10,000 | 3 | 1 | | | |
| Over 10,000 | 9 | 2 | | | |
| Total | 36 | 16 | | | |
| Total number of test samples | 803 | 968 | | | |

The results of air samples taken inside the plant on May 27 indicated PCBs were present in the air at a rate of 60 micrograms per cubic meter. The OSHA exposure limit is 500 micrograms per cubic meter. Additional air samples taken by a contractor in August showed only a slight increase in airborne contamination.

Dioxins and Furans

The Navy had instructions, available in Guam at the time of the accident, which described the dangers involved in fire-related PCB releases. The Navy PCB Program Management Guide published by the Naval Energy and Environmental Support Activity (NEESA) considers pressurized releases to have the potential to generate enough heat to be considered the same as fire-related incidents in which dioxins and furans can be generated. The guide states

"In recent years, EPA has learned that PCB's in transformers involved in fires or explosions can volatilize and contaminate buildings and personnel with not only PCB's but also with dioxins and furans. A PCB fire-related incident is any incident involving a PCB transformer which generates enough heat and/or pressure to result in transformer rupture and release of PCB's."

Based on this guidance, NEESA officials believe that tests for dioxins and furans should be made in cases similar to the one at Piti.

This document is listed as a reference on the PCB management policy Instruction 5090.4, which PWC follows. However, PWC officials told us that they did not follow the procedures concerning pressurized releases because they considered the Navy PCB Program Management Guide as only guidance and not a requirement. Furthermore, they believed that there was not enough heat generated from the pressurized release to



create dioxins and furans and, therefore, did not test for the two substances.

On May 29 Pacific Division personnel from Pearl Harbor began a survey of the plant. On June 3 they endorsed the Pwc's cleanup plan and suggested that Pwc take samples for dioxin and furan contamination as a precaution, even though no fire or explosion had taken place.

PWC's Fena Lab, which had been performing all the PCB tests, could not perform the dioxin and furan tests. Navy officials told us that there are only a small number of laboratories that can analyze samples for dioxins and furans because the equipment used is very expensive and test results are reported in billionths of a gram. This delayed testing for dioxins and furans because the Navy had to contract for the tests. Fena Lab developed the requirements used by the Naval Supply Depot between June 3 and June 18 to select the contractor. After receiving the requirements package, the Naval Supply Depot signed a contract and sent samples for laboratory analysis.

PWC received the laboratory results on Friday, July 10, over the telephone, and found out that dioxins and furans were present. The sample test results for surface contamination ranged from nondetectable to 3,400 nanograms² per 100 square centimeters. Anything higher than 10 nanograms per 100 square centimeters has to be cleaned up because it is above EPA's proposed cleanup standard.

PWC had not scheduled any cleanup work for the weekend of July 11 and 12. PWC stopped all testing and cleanup inside the plant on Tuesday, July 14. Subsequently, PWC has limited all access to the plant to essential personnel.

On July 21 additional samples for dioxins and furans were taken for analysis by a second laboratory. In September PWC received the results that showed less dioxin and furan contamination than the previous analysis. The highest surface contamination for dioxins and furans was 2.06 nanograms per square meter. The contractor collected this sample on the floor where highest concentrations were expected. The area had received primary cleanup, which would have reduced the amount of contamination, before the sample was taken. According to PWC officials, the final report, received on January 14, 1988, confirmed that the dioxin and furan surface contamination was less severe than originally

²One nanogram equals one-billionth of a gram.



reported on July 10, 1987. Navy officials also told us that the first series of samples taken may not have been in accordance with EPA's outlined procedures. This also could account for a significant portion of the difference in the amount of dioxins and furans found on the two sets of samples.

The Navy did not monitor for airborne concentrations of dioxins and furans during the incident and early stages of the cleanup. Therefore, it is not possible to tell if any concentrations were excessive during the early part of the response and cleanup.

Cleanup

Prior to the discovery of dioxins and furans, the Navy had planned to clean up the spill on its own. After the discovery of dioxins and furans, those individuals managing the cleanup decided to contract for cleanup because the Navy did not have the capability to clean up to the required standards for dioxins and furans.

Before cleanup started, the Navy requested an architect-engineer firm, already on an open-end contract, to conduct more testing, determine proper personal protective equipment, and provide recommendations to improve the Navy's response to a previous contractor's study on how to do the required testing. This allowed the Navy to bring the firm on with very little delay. The Navy issued the notice to proceed on August 4, 1987, less than 3 weeks from the time dioxins and furans were discovered, but 10 weeks after the spill. The contractor performed a field investigation from August 21 to 27, 1987, and issued its final report on January 6, 1988.

The contract for the detailed site characterization and for recommending the proper cleanup took longer to finalize because the firm was not already on an open-end contract. The Navy advertised the contract in the Commerce Business Daily beginning on August 7. On October 14 the Pacific Division awarded a contract to assess and characterize the contamination in the plant. On December 7 contractor and Pacific Division officials met with EPA Region IX officials to review the test and sampling plan to be used in characterizing the site. Subsequently, EPA agreed with the plan.

The contractor completed full characterization and its report on the spill in March 1988. Navy officials told us that they will use the data generated during these two studies to contract with another contractor for final cleanup. Navy officials stated that they will have to go through the

normal contracting procedures because they do not have a prenegotiat contract. They believe that this will cause an additional delay in gettin the site cleaned up.

In its comments on our report, DOD stated that the Navy had signed a cleanup contract on May 10, 1988. The total costs of the cleanup will b about \$6 million.

Occupational Safety and Health Administration Inspection

Because there is no requirement to notify OSHA of a PCB spill, the region representative did not learn about the spill until the last week of September when he received a copy of EPA's response to a letter received from Guam's Senator Nelson. As a result of having received the EPA response letter, OSHA conducted an inspection of the PCB spill site. After OSHA's inspection, Navy officials were told that there were no violation to be cited because of prior corrective actions taken by the Navy.

Training

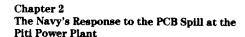
osha regulations require that individuals exposed to hazardous substances, health hazards, or safety hazards during a designated cleanup operation shall be thoroughly trained. Of the 24 workers on the emergency response crew who responded to the initial spill, 22 had training in the proper handling of hazardous substances during a spill condition According to PWC officials, this training included the proper handling o PCBs. However, those individuals who were used during cleanup, other than the emergency response crew, had very little training, if any, in the handling of hazardous waste.

Training Requirements

osha requirements for training those employees exposed to hazardous substances, health hazards, or safety hazards during a designated cleanup operation are covered in 29 C.F.R. 1910.120(e). These regulations cover employees who are exposed or potentially exposed to hazardous substances, including hazardous waste, and are engaged in one the following operations:

- hazardous substance response operations under Comprehensive Environmental Response, Compensation and Liability Act, including any ini tial investigations of the site prior to identification of exposure;
- major corrective actions taken in cleanup operations conducted under the Resource Conservation and Recovery Act (RCRA) of 1976, as amended;

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- hazardous waste operations at state and local government designated sites;
- operations involving storage, treatment, and disposal facilities regulated under 40 C.F.R. 264 and 265 pursuant to RCRA, except for small quantity generators and those employers with less than 90 days of accumulated waste; and
- emergency response operations at any workplace when there has been a release or substantial threat of release of hazardous substances.

The applicable training required depends on which of the above operations are involved. The regulations require that employees on an emergency response team receive 24 hours of training and that employees involved in the cleanup of a designated site, at the time of job placement, receive a minimum of 40 hours of initial instruction off the job site and a minimum of 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. In addition, they require that workers who may be exposed to unique or special hazards will be provided additional training. The regulations also require supervisory personnel to have at least an additional 8 hours of specialized training on managing the hazardous substance operation.

Training for Emergency Response Crew

According to Navy records, 34 individuals were listed as emergency response personnel. They fell into two categories: cleanup/decontamination and cleanup/support. There were 24 individuals listed under cleanup/decontamination who were directly involved in the actual cleanup of the PCB oil. Most of these individuals were from the pest control shop, and PWC considers them to be trained hazardous waste handlers. All but 2 of the 24 individuals had received at least 40 hours of hazardous waste training. The other two individuals had received no training. There were no records at PWC showing whether these 24 individuals received the 3 days of field supervision.

There were 10 individuals listed under cleanup/support who were to support those who were actually cleaning up the PCB liquid. This group included a safety engineer, an industrial hygienist, two crane operators, and the foreman for the pest controllers. Seven of these individuals had no training in hazardous substance operations. Three had at least 40 hours, including the pest control foreman, who had numerous training courses and was the only one who had received the required supervisory training needed to manage hazardous substance operations at the beginning of the incident.

Training for the Workers Involved in Cleanup

Navy records show that 222 employees have been in the Piti Power Plant since the incident, including the 34 emergency response members. Of the remaining 188, who were not listed as emergency response members, 9 had training in hazardous substance handling, response, or management before entering the plant. Pwc had no records showing that any of these individuals had received the required 3 days of field supervision, and Pwc officials were unable to provide us with any further information on this issue.

Hazardous Substance Training

Navy officials stated that because OSHA regulations are not completely clear on who should receive what training, they decided to include all employees involved with plant operation and hazardous spill cleanup activities. On September 18, 1987, the Consolidated Civilian Personnel Office awarded a contract to provide training in hazardous substance incident response to those individuals who have entered and will continue to enter the Piti Power Plant. Instruction started in Guam on October 5, 1987. The course is designed to provide PWC personnel engaging in hazardous substance response and cleanup operations with the training required by OSHA under the hazardous waste operations and emergency response standards (29 C.F.R. 1910.120(e)). The course features three phases of instruction:

- 5 days (minimum 40 hours) of initial training,
- 1 day (minimum 8 hours) of site management training, and
- 3 days of practical training under actual field conditions.

The third phase, to be taught by trained PWC supervisors, features proper procedures for cleanup of PCBs, dioxins, and furans.

Current Plant Operations

Because of the potential for contamination, the Navy required that plant operators wear personal protective equipment whenever they entered the plant to continue its operation. Between July 25 and September 3, 1987, the Navy built a 5,000-square foot personnel decontamination facility. Before entering the plant, operators must be outfitted with the proper personal protective equipment in the entrance way to the facility. Once the employees complete their shifts, they exit through a separate part of the decontamination facility where they have to go through decontamination procedures.



A Navy official told us that the use of this facility and the proper personal protective equipment has significantly reduced the chances of the plant operators being contaminated during plant operations.

Storage and Disposal of PCB Waste

The Navy removed the contaminated transformer and other pieces of equipment from Piti and sent them to DRMO's storage facility until DRMO could dispose of them. The Navy also put the materials used to clean and decontaminate the area in drums and sent them to DRMO for disposal. Because the quantity of PCB-contaminated equipment and other materials was so large, DRMO has had to store a significant amount of it outside until it could be shipped to a disposal facility in California.

In its October 1987 inspection report, EPA criticized DRMO for storing the contaminated transformer outside in a temporary storage area for more than 30 days. On November 30 DRMO sent the first shipment of 190 drums of PCB debris, 7 drums of PCB oil, the PCB transformer, and several crates of PCB-contaminated furniture to Oakland, California. The shipment, weighing about 300,000 pounds, arrived in Oakland during the week of December 20. A contractor licensed to dispose of PCB waste picked it up for disposal. Because of the large volume of contaminated waste that DRMO expects to receive from Piti, additional shipments to disposal facilities is necessary.

Navy PCB Transformers

During the last 3 years the Navy has reduced the number of PCB transformers from 5,104 in December 1985 to 4,608 at the end of 1986 to the December 1987 level of 3,844. There were 62 at the PWC and another 3 at the Ship Repair Facility in Guam. In May 1986, before the Piti spill, the Chief of Naval Operations instructed all major commands to replace PCB equipment in poor condition or with a potential for serious health, environmental, or mission impact. At that time PWC set a schedule to replace all of its PCB equipment by fiscal year 1991 at a cost of about \$2.9 million. PWC had planned to replace the transformer that leaked PCBs in fiscal year 1989 for about \$51,000.

In an October 7, 1987, message, the Commander-in-Chief, Pacific Fleet, noted two recent spills in the Pacific area that underscored the necessity for all commands to work actively to remove equipment containing PCBs from their inventories. He continued by stating that each spill will cost the Navy millions of dollars, lost labor effort to clean up, and lost production, and it will affect support to the fleet. The cost to clean up a single spill outweighs the cost of replacing or retrofitting many pieces of



equipment. A planned replacement of the equipment should minimize the mission disruption. Accordingly, he stated that all activities should prepare detailed plans to replace or retrofit all equipment containing PCBs as soon as possible using the priorities outlined in 40 C.F.R. 761.30. The plan and work accomplishment had to consider mission requirements and not compromise operational readiness.

PWC has initiated actions to further accelerate the replacement of PCB transformers at the base. PWC tested the other 2,000 kVA transformer at Piti and found it was susceptible to the same kind of accident. PWC has temporarily replaced both with portable non-PCB transformers located outside the plant.

Table 2.2 lists in order the Navy's 10 reported PCB spills, including Piti, during fiscal years 1986 and 1987.

Table 2.2: Reported PCB Spills During Fiscal Years 1986 and 1987

| Location | Date | Amount (gallons) |
|--|---------|---------------------|
| Naval Air Rework Facility, Norfolk, Virginia | 4/29/86 | 40-50 |
| Naval Air Station, Memphis, Tennessee | 5/30/86 | 4 |
| Shipyard, Pearl Harbor, Hawaii | 7/15/86 | 5 |
| Navy Telecommunications Center, Guam | 1/09/87 | 0.1 |
| Submarine Base, New London, Connecticut | 4/06/87 | 10 |
| Communications Station, Stockton, California | 4/12/87 | 20 |
| Naval Station, Guam | 5/26/87 | 20 |
| Naval Communications Station, Guam | 6/21/87 | 0.04 |
| Naval Air Station, Memphis, Tennessee | 8/13/87 | 60 |
| Naval Air Station, Alameda, California | 8/24/87 | 40 |
| | | |

Lessons Learned From Spill at Piti Power Plant

osha, in December 1986, and EPA, in April 1987, issued regulations concerning the cleanup of PCB spills. Since PWC was one of the first Navy installations to have a spill covered by these regulations, the PWC commander issued a lessons learned memorandum that may be helpful to other bases that experience similar spills. A limited number of the lessons learned at Piti were also cited by the Commander of the Naval Rework Facility, Norfolk, as lessons learned after the PCB fire there. Examples of the lessons learned at PWC are listed below and discussed in detail in appendix II with accompanying recommendations of the PWC commander.

- Emergency responses for hazardous substance spills should be limited to containment only.
- OSHA considers disposable chemical resistant overalls, such as saranexlaminated coveralls, as adequate protection for liquid PCB cleanup.
- PWC started the PCB cleanup before determining if dioxins or furans were present.
- There are currently no standards for dioxin and furan cleanup.
- OSHA regulations concerning employee safety for hazardous substance cleanups are not clear.
- The estimated cost of the Piti Power Plant PCB cleanup is over \$10 million. (The current estimate is \$6 million.) The estimated replacement cost for the remaining PCB transformers at PWC is \$2.5 million.

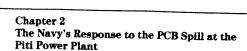
Navy Procedures

Officials from the Naval Facilities Engineering Command's Environmental Office told us that they considered the existing regulations and guidelines adequate for shore activities to use when cleaning up a hazardous waste spill. They recognize that they have had a number of fire-related or pressurized releases of PCBs during the last 2 years and the bases have had some problems in responding. However, they believe that the PCB releases were not a result of inadequate regulations and guidance, but a result of those responsible not ensuring that the regulations and guidance are followed. As of December 1987, they told us that they did not plan to revise any regulations or guidance.

Conclusions

The PWC's emergency response team responded almost immediately to the PCB spill at the Piti Power Plant and contained the spill. However, PWC began cleanup and decontamination before determining if there was a possibility that dioxins and furans were present.

Navy guidelines, available in Guam, state that pressurized releases of PCBs should be treated the same as a fire-related incident with the related possibility of dioxins and furans being created due to excessive heat. At the time of the accident, however, the Navy did not consider this pressurized release of PCBs to be a fire-related incident because there was no evidence of a fire or of excessive heat. As a result, those responsible for the cleanup waited 8 days before deciding to test for dioxin and furan contamination. This action may have possibly delayed cleanup, but, more importantly, it may have exposed workers to dioxin and furan contamination. However, subsequent testing showed that dioxin and furan contamination was within EPA's acceptable limits for surface contamination.



Contracting necessary to accomplish the required testing and analysis was given a high priority, and a contract was awarded to a firm with an existing open-ended contract to provide environmental testing. This allowed the Navy to bring the firm on with little delay to perform the required tests.

The Navy did not have a prenegotiated contract for the detailed site characterization and for recommending the proper cleanup with a private industry response and cleanup company, as suggested by the Navy PCB Program Management Guide. Because of the technical nature of the work to be performed, it required that this site characterization contract be negotiated in a rational manner and that a highly qualified contractor be selected. This took time.

OSHA requires that those individuals involved in hazardous substances cleanup be thoroughly trained. Of the 222 individuals who entered the contaminated area of the plant, only 34 had received the OSHA required 40-hour training course in hazardous substance handling or response. Since the accident, the Navy has contracted for courses currently being taught, which will meet the OSHA requirements.

Recommendations

In view of the problems encountered at Piti Power Plant and the potential for similar problems at other Navy facilities, we recommend that the Secretary of the Navy

- determine the feasibility of having prenegotiated testing, sampling, and detailed characterization contracts available at all installations using PCB equipment and
- ensure that the required training for employees working in potential hazardous situations, such as at Piti Power Plant, is provided so that they will be aware of the potential dangers and of what they should do if a problem arises.

Agency Comments

DOD concurred with our recommendations and described actions it was taking to implement them.

EPA agreed with our findings and stated that the recommendations for the Navy to provide the necessary resources, training to personnel, and followup examinations of personnel after exposure to PCBs were appropriate.



OSHA also generally agreed with our findings and recommendations. However, it did provide some suggested changes that it believed would clarify OSHA requirements, and these suggestions have been incorporated in the report.

Personal Protective Equipment

OSHA regulations require federal agencies to furnish each employee a place of employment that is free from recognized hazards that cause, or are likely to cause, death or serious physical harm. During and immediately after the PCB release, several PWC power plant personnel were exposed to liquid PCBs. PCB exposure through inhalation and skin contact was probable because many of the employees were unaware that the transformer contained PCBs and, as a result, took no action to guard against exposure.

During emergency response and cleanup, PWC employees used personal protective equipment (PPE) that is not recommended for use under the situation that occurred at the Piti Power Plant. The appropriate PPE was not available anywhere in the Navy supply system at that time. PWC has since obtained the required PPE. Employees wore their civilian clothes under the PPE throughout the emergency response and cleanup, despite the danger that the PPE used could leak and contaminate their clothes. PWC later provided the recommended undergarments.

Regulations Governing Worker Safety Equipment

OSHA regulations (29 C.F.R. 1960.8) require heads of federal agencies to furnish each employee a place of employment free from recognized hazards that cause, or are likely to cause, death or serious physical harm. The regulations found in 29 C.F.R. 1910, Occupational Safety and Health Standards, governed worker safety during the PCB spill at the Piti Power Plant. They require that

- PPE will be used, which will protect employees from the hazards they are likely to encounter;
- all PPE will be of a safe design and constructed for the work to be performed;
- before entry into a designated hazardous waste cleanup site, a preliminary evaluation of a site's characteristics will be performed by a trained person to aid in the selection of appropriate employee protection methods; and
- upon entering the site, a more detailed evaluation of the site's specific characteristics will be performed by a trained person to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and PPE for the task to be performed.

The Navy also issued instructions governing PPE. PWC Instruction 5090.5A, PWC Guam Oil and Hazardous Waste Management and Spill Contingency Plan, lists an impermeable suit as the coverall required for cleanup of hazardous materials. The Navy PCB Program Management



<u>Guide</u> states that all workers who may be exposed to PCBs should be equipped with chemical protective clothing to ensure their protection. It recommends that if exposure to liquids is anticipated, the outer coveralls should be made of chemically resistant materials such as Saranex-coated Tyvek or Viton-coated neoprene.

Concerns About the Type of Personal Protective Equipment Worn at Piti

The PPE worn at the Piti Power Plant varied widely. During the initial incident, when plant workers tried to contain the spill, no PPE was worn, although limited PPE was available. The emergency response crew entered the plant shortly after the spill wearing the PPE that was available. As cleanup work continued, the PPE was generally reduced for all workers, except cleanup personnel, by such measures as removing layers of coveralls or changing or eliminating respirators. Cleanup crews using solvents also wore neoprene gloves, Tyvek coveralls, and halfmask respirators. However, when dioxins and furans were discovered, PPE was changed back to what was originally worn to reduce the chance of exposure to these more potent contaminates.

After an OSHA inspection, the OSHA Area Director, in an October 20, 1987, letter, pointed out that PWC had not determined the extent of contamination and what type of PPE would be needed before entering the contaminated area. As a result, OSHA officials and others have expressed concern about the type of PPE worn during the period between the original incident and the current level of PPE worn.

According to an OSHA official, the Navy's current level of PPE offers sufficient protection for workers; however, the PPE worn before cleanup was suspended could have permitted the contamination of some members of the cleanup crew. Workers have only been in the current level of PPE since cleanup was stopped.

Individuals Did Not Wear Any Personal Protective Equipment Immediately After the Accident

During and immediately after the PCB spill, there was some confusion as to the source of the oil. One individual told us that he thought the oil came from a boiler accidentally opened by one of the operators. Our discussions with individuals who were in the plant at the time of the accident revealed that many of them were unaware that the transformer contained PCBs and that they were working in a potentially dangerous situation. In addition, they were not told what to do in case of a spill.

According to Navy figures, 29 individuals in the plant at the time of the accident were contaminated with PCBs through inhalation and skin contact. Several employees told us they were covered with the oil. In addition, some attempted to contain the oil with rags without any protective equipment. A Navy-contracted report said that because some employees did not know that the failed transformer contained PCBs, PPE was not a consideration.

Once PWC determined that the oil contained PCBS, it evacuated most of the employees from the plant. However, some of the medical records we reviewed indicated that some workers stayed in the plant with no PPE; 1 stayed in the plant an additional 8 hours.

PWC Did Not Have the Recommended Personal Protective Equipment for Crews Responding to the Spill

When the PWC emergency response crew first entered the contaminated plant, about 1 hour after the spill, they wore PPE consisting of self-contained breathing apparatus, three layers of plastic bags over their shoes, Tyvek coveralls, painter's hoods, two layers of surgical gloves, and heavy neoprene outer gloves. Except for a change in respirators, the PPE for cleanup crews remained the same until July 14, 1987.

The Tyvek coveralls used and plastic bags worn over shoes are not recommended for use during this type of accident. The coveralls have not been shown to be effective against the permeation of liquid PCBs. Even though OSHA regulations require that chemical-resistant footwear be used, the Navy outfitted its crews in several layers of plastic bags over normal work footwear. The required coveralls and footwear were not available at Piti during the early stages of the cleanup.

About 2 weeks after the accident, the cleanup crews using solvents were no longer required to use self-contained breathing apparatus; they then could use half-face respirators. In addition, other employees entering the plant were no longer required to wear respirators.

Improper Coveralls

National Institute for Occupational Safety and Health's (NIOSH's) <u>Current Intelligence Bulletin 45 Polychlorinated Biphenyls (PCB's)</u>: Potential <u>Health Hazards From Electrical Equipment Fires or Failures, dated February 24, 1986, recommends that, if exposure to liquid PCBs is anticipated, workers should be equipped with coveralls made of chemically resistant materials such as Saranex-coated Tyvek or Viton-coated neoprene. The NIOSH bulletin does not recommend the use of uncoated Tyvek with liquid contaminates.</u>





The Navy incorporated this reference from the NIOSH bulletin into its Navy PCB Program Management Guide. The Pacific Division incorporated the guide into its instruction 5090.4, Management of Polychlorinated Biphenyls. PWC uses this instruction, and it is the basis for the management of their PCB inventory.

In addition, we found that the Ship Repair Facility in Guam also had a Navy instruction that specifically stated that before entering a PCB area Saranex-coated Tyvek should be worn. According to an official at the Pearl Harbor Naval Shipyard, this instruction has contained the Saranex requirement since 1981.

According to documentation and discussions with personnel managing the cleanup effort, they were not aware of the requirements imposed by the regulations with regard to the type of coverall to wear when dealing with liquid PCBs. At the start of the emergency response and cleanup, they believed that the Tyvek coveralls were the proper PPE. According to Navy officials, the NIOSH publication was not available in Guam until about 5 to 6 days before the discovery of dioxins and furans. However, the Navy regulations, guidance, and related documentation were readily available at the time of the accident.

Even if PWC had tried, it could not have followed the PPE guidelines because the Navy's supply system did not carry the Saranex-coated Tyvek coveralls. As a result, there were no Saranex-coated Tyvek coveralls available in Guam, according to PWC officials. Officials from the Atlantic Division of the Naval Facilities Engineering Command suggested on July 24, 1987, that the more preferable coverall was Saranex-coated Tyvek. The Navy's contractor responsible for recommending the proper PPE also made the recommendation in a preliminary report dated September 15, 1987.

On August 17, 1987, PWC started the process to obtain the coveralls by requesting the Naval Supply Depot to provide Saranex-coated Tyvek coveralls. Because the coveralls were not in the Navy supply system, the Navy purchased them using an existing GSA contract. According to the Director of Contracting at the Depot, the request was "walked through" to ensure prompt processing. The Navy signed a contract on October 21. PWC received the first delivery of 234 coveralls on December 28, 5 months after the need was first recognized and 7 months after the spill.



Foot Coverings

According to a "Chronology of PPE" produced by the PWC Occupational Safety and Health Office, the PWC emergency response crew entered the plant wearing three layers of plastic bags over work shoes as part of their PPE. OSHA regulations state that PPE should include chemical-resistant boots with steel toe and shank. However, these were not available in Guam.

The plastic bags may have offered some protection; however, we obtained employee accounts that describe the bags being torn and ripped during the cleanup effort. In addition, some employees recounted bags being dissolved by the solvent being used. It is possible that some of the employee shoes were contaminated during the cleanup effort; however, this is uncertain because the Navy did not test the boots for the presence of PCBs. The employees wore their own work shoes under the bags throughout the cleanup effort. It was not until after the work stoppage that PWC gave them boots, which were to be left at the plant after their shift was completed.

Respirators

Workers changed the types of respirators they wore several times during the response and cleanup. Those individuals in the plant at the time of the accident described a fine mist in the air, and most described breathing problems as a result of being in or near the mist. The Navy did not monitor for airborne concentrations of dioxins and furans during the incident and early stages of the cleanup. Therefore, it is not possible to tell if any concentrations were excessive during the early part of the response and cleanup. Air monitoring for PCBs done by the Navy in June 1987 and by a contractor during its field investigation (August 21 to 27, 1987), showed no readings higher than the OSHA standard of 500 micrograms per cubic meter.

PWC initially sent emergency response crews into the plant on May 26, the day of the accident, with self-contained breathing apparatus. On May 27 PWC replaced this apparatus with half-face respirators, and, by June 3 PWC deleted the requirement for any type of respirator for those individuals not using solvents. However, at the time of our review, individuals going into the plant were required to wear full-face respirators because of the discovery of dioxins and furans.



Civilian Clothes Worn Under Personal Protective Equipment

During the emergency response to and cleanup of the contaminates, the workers wore civilian clothes under the PPE because the recommended undergarments were not available. Since the Tyvek coveralls were transparent, it was necessary to have some type of undergarment.

Our discussions with the workers involved, and statements made by others in writing, indicate that it was not uncommon for the contaminated oil and solvents to penetrate the Tyvek coveralls and soak through their clothes to their skin. One individual we spoke with told us that cleaning the overhead crane was particularly dirty work. To clean the crane, workers built a scaffold. To clean the underside of the crane and the trolley it rides on, the workers had to lie on their backs. This position caused solvent and contaminates to continually dribble on the clothing and eye protection worn by the workers.

The contractor hired by the Navy to evaluate the PPE used by workers in the plant reported that although employees wore half-mask respirators with organic vapor/pesticide and high-efficiency particulate air filter cartridges, the solvents, PCBs, dioxins, and furans may have soaked through the uncoated Tyvek suits and the workers' clothing and may have contaminated cleanup workers, leading to potential skin absorption of the contaminates. The report also stated

"The actual exposure to the contaminates at the time of the release and during cleanup could have been effectively determined only by air monitoring and by analysis of samples of clothing worn at the time of potential exposure. Since these exposure data are not available, exposure must be assessed by monitoring biomedical changes in the exposed workers."

According to PWC officials responsible for the cleanup, they verbally offered to test workers' clothing, shoes, automobiles, and homes or their family members. In response to this offer, a few workers requested that only their automobiles be tested. Test results were negative or showed only very minute traces of PCBs.

PPE Worn by Plant Operators and Support Personnel

Controllers, who are responsible for reading and maintaining the power gauges for proper plant operation, were originally sent into the plant about 2 hours after the accident wearing PPE similar to that of the emergency response crew except that half-mask respirators and only two layers of surgical gloves without neoprene outer gloves were used. Controllers used this same PPE until June 3, when they were allowed to enter the control room without respirators. On June 8 Tyvek coveralls were

eliminated from their PPE because they were not in contact with the contamination.

Other employees who entered the plant between the time of the accident and the discovery of dioxins, such as maintenance crews or inspectors, used many combinations of PPE depending on their location and function within the plant. For example, if maintenance workers were in the same area as a cleanup crew using solvents, they were required to dress in the same PPE as the cleanup crew. The exception to this was that no neoprene gloves were required unless the workers were using solvents. Similarly, if the maintenance workers were in the control room, they dressed as the controllers dressed.

When it was discovered that dioxins and furans were present in the PCB oil, PWC increased all PPE worn within the contaminated areas of the plant. In addition, the contaminated area of the plant, which PWC had drawn in to about 40 or 50 feet from the site of the failed transformer, was pushed back to its original boundaries. PWC also gave the workers in the control room stricter PPE requirements, since they were wearing minimal PPE before the discovery of dioxins and furans.

Each worker who was required to enter the plant initially wore PPE consisting of a single Tyvek coverall, six layers of foot protection, two pairs of surgical gloves, a hood, and a half-face respirator. On July 24 workers were provided with plant shoes, which remained in the plant after use. Before this time workers entering the contaminated area of the plant had used their normal work shoes in the plant. In addition, on July 24 Atlantic and Pacific Division Naval Facilities Engineering Command personnel recommended that workers wear additional PPE, including full-face respirators and Saranex-coated coveralls, and eliminate street clothes.

By August 3 everyone entering the plant was wearing a full-face respirator, two Tyvek coveralls over street clothes, two pairs of surgical gloves, six layers of plastic bags over shoes, and a hood. On August 28 PWC changed the PPE again by adding disposable underclothes, socks, and absorbent coveralls. PWC also modified the outside PPE by adding cotton or leather outer gloves and changed the footwear to three plastic bags and one pair of vinyl booties. On September 11 the number of Tyvek coveralls was reduced from two to one because of a concern for heat stress within the plant.



Conclusions

PWC could not equip its workers with the PPE recommended in Navy guidance for the type of spill that occurred at the Piti Power Plant because it was not available. Even if PWC officials had tried to equip its workers properly, the Navy supply system did not stock the recommended coverall. Also, the recommended foot protection, chemical-resistant boots, was not available in Guam.

Throughout the incident PWC changed the requirement on the type of respirator to be worn by the workers. Navy officials did not determine if dioxins and furans were present. As a result, workers may have been allowed to enter the contaminated portion of the plant early in the cleanup phase without wearing respirators of any kind. When dioxins and furans were found in the area, PWC required workers to wear respirators that offered full-face protection when entering the contaminated area of the plant.

A significant number of the workers wore their civilian clothes under the unprotected coveralls during the emergency response and throughout the cleanup effort because disposable undergarments were not available. Because the coverall worn permitted contaminates to seep through, there is a possibility that workers in both of these groups may have been exposed to PCB, dioxin, and furan contamination.

Because the Navy did not have the required PPE available at the time of the spill and for a significant portion of the cleanup, plant operators and cleanup crews may have been directly exposed to PCB contamination. In addition, they may have been exposed to harmful levels of dioxins and furans in the early stages of the incident.

Recommendation

We recommend that the Secretary of the Navy have the Navy Supply Command, in line with OSHA and Navy regulations, stock the required PPE in a readily accessible location.

Agency Comments

DOD concurred with our findings and recommendation. DOD stated that a panel of senior safety, health, and environmental protection personnel representing headquarters commands will be tasked to review the PCB elimination and control problem. Part of the panel's task will be to review the PCB unique protective clothing requirements. Special emphasis will be given early in the review to ensure the clothing is readily



available to the Navy's field activities. Guidance will be drafted as necessary to try to get all of the items into the standard stock system for easier access by the activities.

Medical Monitoring

Of the 66 employees who were in the Piti Power Plant at the time of the accident, 29 were directly exposed to PCB oil. Within 3 days, 50 of the 66 were medically examined at the Naval Hospital in Guam. Nine employees did not request an examination until after July 1, 1987, and one did not request an examination until October 1987. The Navy established a medical monitoring program to determine the long-term effects of PCBs, dioxins, and furans on the health of all employees who were directly exposed to the PCB oil, participated in the cleanup, or may have been in some way subsequently affected by the spill. This program now includes 251 people.

Varied Exposure to PCBs

One of the employees in the plant at the time of the accident has retired and is being medically monitored by the Department of Labor. The other 65 employees are being medically monitored by the Navy. Subsequently, an additional 157 employees who entered the plant at some point, and 29 who had not entered it, reported to the hospital because they were or thought they might have been exposed to PCBs.

Direct Exposure to PCB-Laden Oil

Of the 66 employees, 29 came into direct contact with the spill,³ including operators, mechanics, supervisors, and others working in the area. Some were contaminated when they came into the spill area to see what happened or to help control or contain the spill so that it did not reach the water drains. After the release, a number of employees began to wipe up or contain the oil. They worked in the area of the spill about 15 to 30 minutes before they were told to evacuate the plant and go to the designated meeting place for emergencies outside the plant. It was about 1 hour before PWC's safety officer informed those at the plant that the oil in the transformer contained PCBS.

Once the plant safety officer learned that the transformers contained PCBs, he told the plant supervisors not to let their employees go home. A bus had been requested to take them to the hospital for medical examinations. However, because the accident happened right at the shift change, some of the contaminated employees had gone home. When the bus arrived, 16 of the 29 employees⁴ who were directly exposed to the spill were taken to the hospital where they were told to strip, wash with waterless soap, dry, and then take showers. Afterward, they were given

³This number includes the employee who retired.

⁴The medical records for the employee who had retired were not available to us, so we could not determine when he reported to the hospital.





medical examinations, which included checking their vital signs and respiratory functions, taking blood samples, and establishing a medical monitoring program for each individual.

An additional 9 employees, who either could not leave the plant earlier or had already gone home, came to the hospital during the next 3 days for medical examinations. Two of the remaining three employees reported to the hospital on June 1 and 4. The last of the 29 employees reported to the hospital on July 9, 1987. Navy officials stated that they did not know that the last employee to report to the hospital, a boiler plant operator, was in the plant until he reported to the hospital and told the doctor that he had been in direct contact with the PCBS.

Indirect Exposure to PCBs

On May 27 and 28, 1987, at the request of medical clinic officials, PWC officials told all plant supervisors to ask all employees who had been in the plant at the time of the accident or who thought they may have been close enough to the plant to be exposed to PCBs to report to the hospital for examinations. Eventually 37 employees reported to the hospital, stating that they had been inside the plant at the time of the accident. Six of the 37 employees did not report for examinations until September, and one reported in October.

Other Individuals Who May Have Been Contaminated

To be on the safe side, PWC and hospital officials decided to ask all Navy employees who thought they may have been exposed to PCBs to report for a medical examination. During the following months the number of employees who requested a medical examination reached 252, which includes 186 people who reported to the hospital even though they were not directly exposed.

Medical Monitoring Program

Navy guidance states that employees who work in an area that has been designated to be cleaned up should be placed in a medical monitoring program. These regulations also require that medical examinations be given to employees before they begin work as part of the cleanup crew in a hazardous area designated for cleanup and annually thereafter. Also, at the time of an accident, employees are to be provided a baseline medical examination if they have not had an examination within the last year. These examinations are given so that the Navy will have a record of the physical condition of each employee at the time he starts



work and on a periodic basis. PWC has also established a medical monitoring program for 251 people⁵ who may have been exposed to PCBs. However, over 70 employees had not had a medical examination for more than 1 year before the accident, and they did not receive a medical examination until more than 80 days after the accident. As a result, the Navy did not know the medical condition of these employees at the time of the accident.

However, OSHA regulations only require the Navy to give medical examinations to the 132 employees involved in the cleanup of the designated area instead of all 251 employees who are now included in the Navy's medical monitoring program. Of the 132 employees who should have received medical examinations, 50 did not receive the baseline medical examination until at least 80 days after the spill.

Regulations and Guidance

Medical examinations are required by 29 C.F.R. 1910.120(f) for employees who are performing designated cleanup activities where potential exposure to toxic substances, such as PCBs, exists. The employee is to have a medical examination before entering the potentially dangerous area, and if the employee is going to be working in the area for extended periods of time, the employee is to have an examination annually. At the time of an emergency, such as a spill, each affected employee is to have a baseline medical examination.

NEESA'S Hazardous Substance Spill Contingency Planning Manual states that all on-scene operations and cleanup team personnel who work with or near hazardous substances be provided continuous medical monitoring. This includes a preplacement physical exam which establishes personal physical baselines so that personnel with physical conditions that can be aggravated by chemical exposure, or conditions that would not permit the safe use of respiratory protective equipment or fully encapsulated suits, can be identified.

The Navy Pwc Guam Site Specific Health and Safety Plan for Piti Power Plant states that all Pwc personnel who operate the power plant or work in the PCB cleanup will participate in a medical monitoring program. This program is to be initiated when an employee starts work, and it is continued on a regular basis. NIOSH Bulletin 45 states that a medical surveillance program should be established to prevent or detect adverse health effects at an early stage in workers resulting from exposure to PCBs.

 $^{^{5}}$ This number does not include the retired employee.

Medical and work histories should be taken for each worker before job placement and updated periodically.

Delays in Examining Employees

The Navy made a conscious effort at the beginning of the medical monitoring program to only include those employees who had been directly contaminated and those involved in the cleanup and decontamination. After dioxins and furans were found, the Navy decided to monitor 251 employees who had reported to the hospital for medical examinations.

As shown in table 4.1, 73 employees involved in cleanup or plant operation had not had a medical examination for over 1 year before the spill and were not given a baseline examination for more than 80 days after the accident. As a result, the Navy did not know the medical condition of these employees at the time of the accident. Navy officials told us that the delay in receiving the required examinations was a result of the lack of resources (funds, equipment, and personnel) and the fact that PWC and clinic personnel did not closely follow and monitor the implementation of set procedures. As shown in table 4.1, it took over 4 months to get examinations for 18 of the employees.

Table 4.1: Number of Days After the Date an Employee May Have Been Contaminated Until the Baseline Medical Examination Date

| | Total | | | | | |
|-----------------------------------|--------|------|--------|-------------------------|---------|-------------|
| Category | number | 1-80 | 81-100 | Number of da 101-110 | 111-120 | 121 or more |
| Administrative | 14 | 6 | 1 | 2 | 4 | |
| Cleanup/decontamination | | | | | | |
| Pest controllers | 15 | 13 | 1 | 1 | • | |
| Laborers | 27 | 25 | • | 2 | • | |
| Support | 10 | 8 | • | 2 | • | |
| Cleanup support | 66 | 30 | 7 | 7 | 9 | 13 |
| Involved in incident ^a | 65 | 61 | • | 1 | 1 | |
| Maintenance | 14 | 6 | 5 | 2 | 1 | |
| Operators | 14 | 5 | 6 | 1 | 1 | 1 |
| Others | 26 | 24 | 1 | • | • | 1 |
| Total | 251 | 178 | 21 | 18 | 16 | 18 |

^aThis includes those directly contaminated, plant operators in the plant, and those who participated in the initial cleanup.

Navy officials told us that the reasons for some of the people not getting the baseline or regularly scheduled examinations were as follows:





- limited resources were available for clinic operations;
- some employees did not report for examinations as requested or scheduled;
- some employees were working in the area who originally had not been scheduled to work in a hazardous area; and
- administrative procedures to ensure that all employees working in a hazardous area receive the required examinations had not been closely followed or monitored.

In its comments on a draft of this report, DOD agreed that 73 people were not initially evaluated for short-term health risks and that lack of resources was a factor. However, it stated that with the exception of chloracne (acne-form dermatitis), the medical profession, to date, has not established any statistically or clinically significant long-term health risks from acute (short-term) exposure to PCBs.

Effects of PCBs on Humans

The Navy states in its Site-Specific Health and Safety Plan for Plant Operation and Facility Decontamination that workers who are acutely exposed to high levels of PCBs usually report smelling a sweet, chlorine-type odor, along with eye, nose, and throat irritation. Skin problems such as chloracne and hyperpigmentation may develop 60 to 90 days after skin or systemic exposure. Long-term, low-level exposure has been observed as causing minor liver damage and possible impairment of the nervous system. Reproductive and carcinogenic effects have been found in animals after chronic exposure to PCBs; as a result, PCB is listed by the National Toxicology Program and NIOSH as a suspect human carcinogen.

Exposure to dioxins and furans, at low levels, have few discernible effects. However, several chemical industry accidents have occurred in which people were exposed to high concentrations of dioxins and furans, and a variety of effects were found. These include hyperpigmentation, chloracne, liver disfunction, weight loss, nausea, and nervous system problems. Exposed animals have shown carcinogenic, tetratogenic, and mutagenic effects.

NIOSH recommends that exposure to PCBs in the workplace be limited to or below the minimum reliable detectable concentration of 1 microgram of PCBs per cubic meter, which was determined as a time-weighted average for up to a 10-hour day, 40-hour week. This standard will be used in the Piti cleanup project.

In our discussions with Navy hospital officials, they told us that they had researched all of the available literature and found differences of opinion on the effects of PCBs on humans. EPA and OSHA officials state that studies have shown no conclusive proof of the effects PCBs, dioxins, and furans have on humans. The Area Director, OSHA, stated in an October 20, 1987, letter to the Commanding Officer, PWC, that PCBs are absorbed through the intact skin, into the blood, and transported to target organs. Toxic effects of repeated skin contact with PCBs include cumulative liver damage, chloracne, and possible reproductive effects in females.

Naval Hospital's Long-Term Study

As a result of the PCB spill, the Naval Hospital proposed a long-term study of those individuals who are included in the medical monitoring program. This study will be used to determine the long-term effects of exposure to PCBs on PWC employees.

As of January 19, 1988, the hospital had almost completed the first round of tests for all 251 employees and has completed second-round tests on 85. The first round was scheduled for about 3 months after an employee was exposed, and the second round was scheduled for 6 months after exposure. A third round will be given 1 year after exposure. After these tests are completed, all employees will be tested annually on their birthdays until the completion of the program. The medical monitoring program for each individual is outlined in table 4.2.





Table 4.2: Medical Monitoring to Be Performed on Each Individual Included in the Program

| Item | Initial | Quarterly | Annual |
|---------------------------|---------|-----------|--------|
| Medical history | X | | X |
| Work history | X | | X |
| Visual acuity | X | | X |
| Pulmonary function tests | X | | X |
| Physical examinations | X | | X |
| Audiometry tests | Х | | |
| Chest X-ray | X | | X |
| Electrocardiogram | X | | |
| Complete blood counts | X | X | X |
| Blood chemistry | X | X | |
| PCB blood level | X | | X |
| Urinalysis | X | X | |
| Dermatology exam | X | | x |
| Eosentiphils ^a | X | | X |

^aTests to determine problems in the body's immune system.

Hospital officials hope to be able to computerize the results of the testing program for the parameters set forth in the site specific plan to determine if there are any trends. They are looking at anything that would give a clue to any risks associated with PCB contamination, since the study is in an early stage. The focal point of the testing will revolve around the immune system, which the doctor in charge of the medical monitoring believes will give the earliest indication of a risk faced by an individual. By doing this study, hospital officials hope to be able to provide more information on the effects that PCBs may have on humans.

In its comments on a draft of this report, DOD stated that although valuable documentation may result from this study, it is anticipated that it will be consistent with other well-controlled epidemiologic studies, which have failed to substantiate any long-term health hazards to humans from acute (short-term) PCB exposure.

Testing for PCBs in the Blood

As part of the medical monitoring program, the hospital is testing the blood of each of the 251 employees for PCBs. The first round of PCB blood tests were completed by November 16, 1987, and 128 second-round tests have been completed. The Navy asked the contractor laboratory to test the blood of each individual to determine the different PCB Aroclors (PCB derivatives) contained in each individual's blood.

Navy officials told us that there is no set level for PCBs that can safely be in an individual's blood. The contractor laboratories that do the testing have found that the average PCB blood level for all individuals tested over several years is about 30 parts per billion (ppb). However, laboratory officials told the Navy that individuals with a PCB blood count of 10 ppb have experienced problems. EPA officials state that the effects of PCBs in the blood can have different results, depending on the amount of PCBs and the susceptibility of each individual. In addition, PCBs in the blood could have been ingested at the time of the accident or could be the result of the body trying to rid itself of PCBs in fatty tissue that were absorbed earlier from other sources.

The results of the PCB blood tests indicate that there are two PCB Aroclors present in bloodstreams of the employees—Aroclors 1242 and 1260. EPA officials told us that recent studies indicate that there is no evidence or insufficient evidence that Aroclor 1242 causes cancer. Study evidence on Aroclor 1260 shows that it is more likely to cause cancer than Aroclor 1242.

Aroclor 1242, in many cases, showed up at much higher concentrations than Aroclor 1260. The PCB Aroclor released from the Piti transformer was 1260. However, Navy officials told us that there is no way to determine if the PCB with an Aroclor of 1260 found in the employees' blood is from the Piti accident. They told us that there are no definitive tests that show when PCBs will show up in an individual's blood.

As a result, the Navy does not know if the PCB Aroclor 1260 is from Piti or whether the employees picked it up from some other source. They also stated that they did not know where the employees were exposed to the PCB Aroclor 1242 that showed up in the blood tests. It is possible that a number of employees could have picked up the PCB 1242 when they worked at other jobs involving PCBs.

We reviewed the PCB blood tests for the 251 employees included in the monitoring program and found that 81 had a total PCB blood level of over 30 ppb. Table 4.3 shows the number of employees with total PCBs over 30 ppb and the number of employees with only PCB Aroclor 1260. The highest total PCB blood count level was 119.5 ppb, and the highest PCB Aroclor 1260 blood count was 75.8 ppb.



Table 4.3: Number of Employees With a PCB Blood Count Level Over 30 Parts Per Billion

| Parts per billion | Number of employees with | | | |
|-------------------|--------------------------|--------------|--|--|
| | All aroclors | Arocior 1260 | | |
| 30-40 | 40 | 10 | | |
| 41-50 | 14 | 3 | | |
| 51-60 | 13 | 2 | | |
| 61-70 | 4 | 1 | | |
| 71-80 | 4 | 1 | | |
| 81-90 | 1 | • | | |
| 91-100 | 1 | | | |
| Over 100 | 4 | • | | |
| Total | 81 | 17 | | |

DOD commented that there is no generally recognized safe limit for serum PCB levels. Furthermore, there has been no established relationship between PCB exposure and serum PCB levels. The production of liver cancers has been demonstrated in experimental animals following the injection of both Aroclor 1242 and 1260. However, the relevance to humans of these studies has not been demonstrated.

Medical Problems Experienced

The doctor in charge of the medical monitoring program has sent nine employees letters covering the results of their physical examinations that show that their triglyceride levels (the level of acids for breaking down fats) were greater than normal. In these letters he indicated that the results were outside the accepted limits and are possibly related to the PCB spill. He also stated that he would provide detailed results to the individual's family physician upon request.

Table 4.4 outlines the medical problems mentioned in the 104 medical records we reviewed or those brought to our attention during interviews with selected employees. It was impossible to determine which problems were caused by the PCBs and which were caused by a combination of the PCBs and the chemicals used to clean up the spill or some other unknown reason. Most of the employees who complained were those directly exposed or in the cleanup crew.



Table 4.4: Number of Employees Complaining of Incident-Related Medical Problems

| Category | | | Medical problems | | | | |
|--|------------------|---------------------|--------------------------------------|-----------------------|-------------------|----|----------------------------|
| | Number in sample | Number affected* | Breathing or throat irritation | Nausea or diarrhea | Eye irritation | | Rash or skin irritation |
| Administrative | 2 | • | • | • | • | • | • |
| Cleanup and/or decontamination | 44 | 20 | 3 | 4 | 4 | 5 | 13 |
| Cleaning support | 19 | 6 | • | 1 | 1 | 2 | 3 |
| Workers in plant at the time of the incident | 32 ^b | 16 | 11 | 4 | 10 | 5 | 10 |
| Workers with limited access to plant | 3 | 1 | 1 | • | • | • | • |
| Equipment preventive maintenance | 2 | • | • | • | • | • | • |
| Other plant operators | 2 | • | • | • | • | • | • |
| Total | 104 | 43 | 15 | 9 | 15 | 12 | 26 |

^aNone of the employees in the sample were affected by all of the problems listed, but some complained of more than one symptom.

Almost all of these symptoms lasted for only a short time. We found only two cases in our sample in which the medical problems continued for more than 1 month.

Testing Family Members

The Navy is not required to test members of the employees' families for PCB blood levels. Although the Navy offered to test the worker's family members, no workers accepted the offer. The Navy does not plan to test any family members because it believes that there is very little chance for the contaminates to have reached the employees' homes. It has offered to test employees' automobiles. It tested a number of cars and found either traces of PCB or none at all. They believe that since the PCBs did not show up in significant amounts in the cars, there is very little chance that the PCBs reached the employees' families.

Conclusions

The Navy's medical monitoring program is a substantial effort and now appears to include all of the employees who could have been affected by the spill. This is in line with OSHA regulations and Navy guidance, which require employees who work in an area where PCBs are used or work in cleanup crews to be placed in a medical monitoring program. This program includes a preplacement physical examination for establishing a

^bThe Navy could not locate the medical records for one employee.

Chapter 4 Medical Monitoring

medical baseline and periodic medical examinations (usually annually). However, 73 employees involved in the cleanup or plant operation, had not received a baseline examination, and it had been over 1 year since they had the required periodic examination. The delay in receiving the required examinations was a result of the lack of resources (funds, equipment, and personnel) and not closely following and monitoring the implementation of set procedures. As a result, the Navy did not know the medical condition of these employees at the time of the accident, and it may be difficult to determine if there are any long-term effects on the health of these individuals.

Recommendation

We recommend that the Secretary of the Navy emphasize the requirement that employees who work in hazardous conditions receive baseline medical examinations before entry into the workplace and receive the regularly scheduled medical examinations.

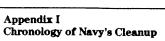
Agency Comments

DOD concurred with our findings and recommendations. It stated that the senior panel will emphasize to their field activities the importance of doing baseline physical examinations on personnel who will work in hazardous conditions. Additional guidance will be issued as needed.

EPA agreed with our findings and recommendations.

Appendix I Chronology of Navy's Cleanup

| | contamination as a precaution, even though no fire or explosion had taken place. |
|---------|---|
| June 23 | The Navy awarded a contract to California Analytical Labs for dioxin and furan testing. PWC took wipe samples, which were air shipped for laboratory analysis for dioxins and furans. |
| July 10 | PWC received the laboratory results over the telephone, which indicated the presence of dioxins and furans at 3,400 nanograms per 100 square centimeters. |
| July 13 | Written results of the tests for dioxins and furans arrived. |
| July 14 | PWC stopped all testing and cleanup inside the plant because dioxins and furans were present. PWC limited access to the plant to essential power plant personnel. PWC notified Guam EPA by telephone. Testing showed various degrees of PCB contamination on all four levels of the plant. Air samples taken in May indicated that PCBs were present in the air at a rate of 60 micrograms per cubic meter. The OSHA standard is 500 micrograms per cubic meter. |
| July 21 | Representatives from the Atlantic and Pacific Divisions, Naval Facilities Engineering Command arrived to conduct a second survey of the plant. A contractor took additional wipe samples for dioxins and furans for analysis by Twin City Labs. |
| July 24 | Atlantic Division representative recommended 24-hour environmental monitoring for plant coolant water, air sampling for dioxins and furans, and a full site contamination study. Atlantic Division representative recommended a change to PPE to provide an increased margin of safety by using full-rather than half-face mask respirators and an added layer of coverall. |



| July 25 | PWC initiated actions to implement Atlantic Division's recommendations |
|--------------|--|
| July 31 | • EPA Region IX informed PWC of OSHA training requirements under 29 C.F.R. 1910. |
| August 3 | Pacific Division awarded Harding Lawson and Associates a contract to review PPE, heat stress, decontamination procedures, training, and the safety and health plan; obtain wipe samples to establish a ratio between PCBs and dioxins and furans; and to take air samples for PCBs and diox- ins and furans. |
| August 20 | Personnel from Harding Lawson and Associates and Pacific Division arrived to conduct a third survey of the plant. They gave a press confer ence, where they expressed that the Navy had done a complete, safe, and effective job handling the incident. |
| August 24 | Hospital officials began the first round of medical monitoring examinations of all personnel that had entered the contaminated area. The officials drew blood from all employees in the health monitoring program and sent the samples to a Massachusetts laboratory to test for PCBs. |
| August 26 | Harding Lawson and Associates and Pacific Division completed their survey. |
| September 4 | PWC opened a new decontamination station. |
| September 8 | The Twin City Labs' analysis showed less dioxins and furans contamination than the analysis by California Analytical Labs. |
| September 15 | PWC received Harding Lawson and Associates' preliminary report on the health and safety activities at the plant. |

| Appendix I | | | |
|------------|----|--------|---------|
| Chronology | of | Navy's | Cleanup |

| September 18 | The consolidated Civilian Personnel Office awarded a contract to International Technology Corporation for the training required to fulfill OSHA requirements. |
|--------------|---|
| September 22 | Versar, Inc., was selected to determine the extent and level of PCB, dioxin, and furan contamination and recommend remedial action. |
| ctober 5 | PWC started the training course required by OSHA for employees involved in the Piti Power Plant incident. PWC received a draft of Harding Lawson and Associates' final report, which stated that no airborne dioxins and furans were found at the detection limits of the laboratory. Samples for airborne PCBS showed the highest reading to be 68 micrograms per cubic meter. (The OSHA standard is 500 micrograms per cubic meter.) The highest surface contamination for dioxins and furans was 2.06 nanograms per square meter. The contractor collected this sample on the floor where PWC officials expected the highest concentrations. The area had only received gross cleanup before the sample was taken. The proposed DOD cleanup standard for dioxins and furans surface contamination is 10 nanograms per square meter. The report confirmed that dioxins and furans contamination was less severe than originally reported on July 10. The level detected by the second series of test samples was only 2.06 nanograms per 100 square centimeters. |
| October 5 | OSHA conducted a referral inspection of the PCB spill in response to Senator Nelson's letter. |
| October 9 | OSHA representative briefed the Commander of Naval Forces, Marianas and PWC and the hospital officials, stating that there was no past or present violations to be cited because corrective actions had been taken. |
| October 14 | Pacific Division awarded Versar, Inc., a contract to assess the contamination in the plant. |
| December 7 | Versar and Pacific Division officials met with EPA Region IX officials to review the test and sampling plan, and EPA agreed with them. |







Appendix I Chronology of Navy's Cleanup

| December 9 | Versar began taking additional air and surface samples as required by the test and sampling plan. |
|------------------|---|
| January 14, 1988 | Pwc received the Harding Lawson and Associates final report. |
| May 10 | Cleanup contract awarded to International Technology Corporation. |

Lessons Learned and Recommendations Cited by the Commander, Public Works Center, Guam

Based on the events occurring subsequent to the PCB spill at Piti Power Plant, the PWC commanding officer issued a memorandum stating the following lessons learned and his recommendations to solve any problems.

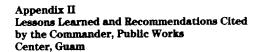
1. Emergency responses for hazardous substance spills should be limited to containment only. OSHA regulation 29 C.F.R. 1910 requires a site characterization and analysis, a site safety plan, and training for all personnel involved in the hazardous substance cleanup, prior to the start of the cleanup.

Recommendation: The Hazardous Substance Spill Contingency Plan should reflect the following:

- The plan must be written as a "generic" site safety plan and must specify that a site-specific plan will be written for each cleanup action.
- The emergency response should be limited to securing of hazards and containment only.
- PPE specified in the plan should include Saranex-laminated coveralls
 with hoods and booties, self-contained breathing apparatus, and disposable underwear, socks, boots, and protective gloves. These should be
 available in sufficient quantities to sustain the envisioned emergency
 response requirements.
- Personal clothing should not be allowed to be worn into the contaminated area.
- The safety manager/industrial hygienist should be members of the emergency response team.
- Emergency response team personnel receive training per OSHA regulation.
- Decontamination procedures should be outlined.
 - 2. A site characterization and analysis was not completed prior to starting the cleanup.⁶

Recommendation: Prior to starting a cleanup of a hazardous substance, a site characterization and analysis must be completed by professionally experienced personnel in order to comply with OSHA regulation 29 C.F.R. 1910 (c). A professional consultant is recommended.

⁶In commenting on a draft of this report, DOD noted that the OSHA site characterization requirement had been misinterpreted in this part of the Navy analysis. It stated that subsequent review indicated that site characterization efforts complied with OSHA requirements.



3. Emergency response PPE for PCB spills and responses involving hazardous substance liquids should be changed.

Recommendation: Emergency response PPE should be all disposable including underwear, socks, and foot protection. Outer PPE should include Saranex-laminated coveralls with hood and booties, self-contained breathing apparatus, disposable steel-toed boots, and gloves appropriate for the hazardous substance spilled. No personal items, including clothing, should be worn by emergency response personnel into the contaminated area. (This was also cited in the Norfolk PCB accident.)

4. OSHA considers only Saranex-laminated coveralls as adequate protection for PCB cleanup.

Recommendation: Activities should maintain sufficient stock of Saranex-laminated coveralls in their inventories for PCB and other hazardous liquid cleanups.

5. Decisions on respirator requirements were made prior to obtaining air monitoring test results.

Recommendation: Air samples should be taken as soon as possible to determine the proper respiratory protection.

6. The PCB cleanup was started prior to determining if dioxins or furans were present.

Recommendation: Samples should be tested for dioxins and furans prior to the start of cleanup if the incident involved a PCB fire or pressurized release of PCBs as discussed in the National Institute of Occupational Safety and Health Bulletin 45.

7. OSHA regulations concerning employee safety for hazardous substance cleanups are not clear.

Recommendation: Confirm PPE and employee occupational safety and health issues with OSHA prior to starting a hazardous substance cleanup.

8. Standards for hazardous substance cleanups are not always available or require interpretation from EPA.



Appendix II
Lessons Learned and Recommendations Cited
by the Commander, Public Works
Center, Guam

Recommendation: The plan of action for the cleanup should be immediately confirmed with EPA. The cleanup method and standards for the cleanup of the hazardous substance should be confirmed with EPA prior to start of the cleanup.

9. A Management Action Team to conduct the cleanup is needed to solve the many problems that occur during cleanup.

Recommendation: Immediately establish a Management Action Team to coordinate containment and cleanup. The chairman of this team should have direct access to the Base Commanding Officer. Members of the team should include environmental, safety, medical, supply, employee (union), and regulatory agency representatives. The Team should meet at a minimum of once a week. (This was also cited in the Norfolk incident.)

10. Medical protocols for employees involved in hazardous substance operations are lacking.

Recommendation: The Medical Command should publish the desired program for medical monitoring for employees involved in hazardous substance operations.

11. The Navy can be critized for moving too slowly in areas where contracting actions are necessary.

Recommendations: The Naval Facilities Engineering Command and the Medical Command should establish contingency contracts where inhouse capabilities do not exist for environmental laboratory testing, medical laboratory testing, and where environmental and hazardous substance consultants are not readily available. Naval Supply Command should either contract or stockpile certified PPE in sufficient quantities to ensure availability. (Also cited in the Norfolk incident.)

12. There are few laboratories in the United States capable of testing blood for PCB content.

Recommendation: Blood tests for PCB should be contingency contracted because of the lengthy contractual procedures required.

13. Saranex-laminated coveralls with hoods and booties are not stocked in the Navy supply system.

Appendix II Lessons Learned and Recommendations Cited by the Commander, Public Works Center, Guam

Recommendation: Naval Supply Command should stock Saranex-coated coveralls in the Navy supply system.

14. Large quantities of waste accumulated due to the lack of a disposal or shipping contract of hazardous wastes.

Recommendation: Defense Reutilization and Marketing Service should have contingency plans/contracts to dispose of or ship back to the United States sudden large quantities of hazardous substances.

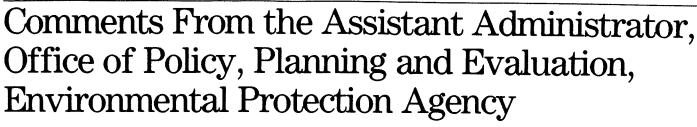
15. There are currently no standards for the cleanup of dioxins and furans. The DOD has proposed standards of three nanograms per square meter for surface samples and ten picograms⁷ per cubic meter for air samples.

Recommendation: Confirmation of the standards is required prior to the start of the cleanup.

16. The estimated costs of the Piti Power Plant PCB cleanup is \$10 to \$20 million. The replacement of all PWC Guam PCB transformers is estimated to be \$2.5 million.

Recommendation: Accelerate replacement of all Navy PCB transformers. (This was also cited in the Norfolk incident.)

⁷One picogram equals one-trillionth of a gram.





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, D.C. 20460

.11 22 1988

POLICY, PLANNING AND EVALUATION

DECEMBER AND BESTER

Mr. Hugh J. Wessinger
Senior Associate Director
Resources, Community, and
Economic Development Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Wessinger:

On May 26, the General Accounting Office (GAO) sent the Environmental Protection Agency (EPA) a draft report for review. The report is entitled "PCB Spill At The Guam Naval Power Plant". According to the requirements of Public Law 96-226, the Agency has reviewed the report and provides the following comment.

Agency staff found that the report is thorough and accurate. We believe that the recommendation for the Department of the Navy to provide the necessary resources, training of personnel, and followup examinations of personnel after exposure to polychlorinated biphenyls (PCBs) is appropriate.

I appreciate the opportunity to review and comment on this report.

Sincerely,

Linda J. Fisher

Assistant Administrator



Note: GAO comments supplementing those in the report text appear at the end of this appendix.



ASSISTANT SECRETARY OF DEFENSE WASHINGTON, D.C. 20301-8000

PRODUCTION AND LOGISTICS

AUG 5 1988

E

Mr. Frank C. Conahan Assistant Comptroller General National Security and International Affairs Division United States General Accounting Office Washington, DC 20548

Dear Mr. Conahan:

This is the DoD response to General Accounting Office (GAO) Draft Report, "TOXIC SUBSTANCES: PCB Spill At The Guam Naval Power Generating Plant," Dated May 26, 1988 (GAO Code 392384), OSD Case 7661. With one exception, the DoD generally concurs with the findings and recommendations. The exception is that the Navy did conduct a site characterization as required by 29 CFR 1910 (see the DoD response to Finding C in the enclosure). The draft report indicates that at least some of the required action was not done.

The DoD notes that the remote location of Guam limits the availability of specialized equipment, laboratory and technical support. In addition, the power plant, which supplies about 30 percent of the electricity in Guam, had to remain open for both military and civilian requirements, further complicating remedial action. Despite these unusual circumstances, the Navy rapidly mobilized resources to address the situation.

The detailed DoD comments on the report findings and recommendations are provided in the enclosure. The DoD appreciates the opportunity to comment on this draft report.

Sincerely,

Merle Freitag, MG, USA Military Deputy

Enclosure

GAO DRAFT REPORT - DATED MAY 26, 1988 (GAO CODE 392384) OSD CASE 7661 "TOXIC SUBSTANCES: PCB SPILL AT THE GUAM NAVAL POWER GENERATING PLANT®

DEPARTMENT OF DEFENSE COMMENTS

FINDINGS

O FINDING A: Background: Polychlorinated Biphenyls. The GAO explained that polychlorinated biphenyls (PCBs) are a class of fire resistant chlorinated hydrocarbon fluids, which have been used mainly as insulators or heat transfer liquids in large electrical transformers and capacitors. The GAO noted that, because of their chemical stability, PCBs tend to persist in the environment and are considered a chronic toxic hazard, since they are readily absorbed and retained by human and animal tissue. The GAO further explained that the Toxic Substances Control Act of 1976 (TSCA) regulates the production of toxic substances, including PCBs, and provides for the protection of the environment by requiring that electrical equipment containing PCBs be tested and their use restricted. The GAO reported that the Environmental Protection Agency (EPA) established prohibitions of, and requirement for, the manufacture, processing, distribution, use, disposal, storage, and marking of PCBs and PCB items. In addition, the GAO observed that, on April 2, 1987, the EPA issued regulations implementing TSCA policy for the cleanup of spilled PCBs, which regulations were effective after May 4, 1987. The GAO commented that, even prior to this policy, each EPA regional administrator had the authority to enforce adequate cleanup of a PCB spill. (pp. 2-3, pp. 8-9/GAO Draft Report)

DOD RESPONSE: Concur

Page 57

FINDING B: The Spill At The Navy Piti Power Plant. The GAO reported that, at 3:22 P.M., on May 26, 1987, about 20 gallons of oil containing PCBs were released by the pressure relief plug on the termination box of a 2,000 (KVA) kilovolt amperes transformer located inside the Piti Power Plant at the Navy Public Work Center (PWC), Guam. The GAO noted that a fire was not, however, associated with the release. The GAO explained that the plug was designed to relieve pressure to prevent an explosion, with the system based on a 1940 design when problems with PCB oil were unknown. The GAO reported that, although the exact cause of the spill is unknown, it is suspected it resulted from low-level arcing

Now on pp. 2, 8.



through deteriorated insulation on wiring, with a gradual increase in pressure. The GAO observed that the Piti Power Plant generates about 66 megawatts of electricity or about 30 percent of the electricity used on Guam and is one of three primary electrical generating facilities on the island. According to the GAO, when all three plants are operating at capacity, there is sufficient electricity to meet the Island's demands; however, there have been frequent and long durations of load sharing within the power grid because portions of the generating system have been inoperative. The GAO noted that, because of the electrical load and the limited available generating capacity, the Navy did not shut the plant down when the spill occurred. The GAO observed that the Navy, as well as everyone else on the Island, usually operates in a condition where there is no excess capacity. (p. 2/GAO Draft Report)

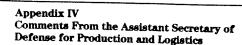
<u>DoD Response</u>: Concur. Information obtained subsequent to the GAO audit indicates that the release occurred through a split in the side of the transformer termination box rather than via a relief plug. Although the exact cause of the failure remains unknown, it is believed that heating of the PCB fluid was caused by a breakdown in dielectric strength of the fluid and not deteriorated insulation on the wiring.

o FINDING C: Emergency Response. According to the GAO, on May 26, 1987, after informing the Guam EPA by telephone of the incident, the PWC emergency response team entered the plant to assess the extent of contamination. The GAO reported that, after consultation with the PWC Safety Officer and the base hospital Occupational Health and Preventive Medicine personnel, emergency cleanup was started using personnel from the pest control office, who had training in the handling of hazardous waste. The GAO observed both the EPA and OSHA regulations require that a trained individual inspect and make a site characterization of the potential hazard that would be face before any cleanup personnel enter the contaminated area. The GAO concluded, however, that the PWC emergency response team responded immediately and the cleanup crews entered the contaminated areas to begin cleanup and decontamination before the inspection was made. The GAO further concluded that, as a result, the response team and the cleanup crews may have encountered contamination without proper protection. The GAO reported that on May 27, the next day after emergency cleanup was started, Guam EPA officials conducted a site survey of the contaminated area of the plant. The GAO noted that PWC officials also informed the Navy Environmental Preventive Medicine Unit Six at Pearl Harbor, EPA Region IX, the Coast Guard National Emergency

Now on pp. 2, 9.

See comment 1.





Now on pp. 3, 13-14. See comment 2. Response Center, and the Navy chain of command of the spill; and took samples to determine the boundary of PCB contamination in and out of the plant. (pp. 3-4, PP 18-19, pp. 25-26/GAO Draft Report)

DoD Response: Partially Concur. The Navy took appropriate measures for site characterization, as defined by 29 CFR 1910. However, at the time the lessons learned and recommendations were compiled by the Navy (which the GAO included as Appendix II to the report), 29 CFR 1910 was erroneously interpreted to require completion of site characterization prior to beginning cleanup. Detailed review of 29 CFR 1910 since that time has indicated that a site characterization is conducted in three phases and is a continual process whose duration extends until completion of cleanup. The three phases, extracted verbatim from the supplementary information section accompanying 29 CFR 1910, as found in 51 FR 45656, are as follows:

- Prior to site entry, gather information away from the site, conduct reconnaissance from the site perimeter and conduct off-site characterization.
- Conduct on-site surveys. During this phase, restrict entry only to reconnaissance personnel.
- Once the site has been determined safe for commencement of other activities, continue monitoring to provide an updated source of information about site conditions.

Immediately after the release occurred, the spill response team assembled outside of the plant with representatives from the safety and environmental branches of the PWC Guam. Based on information from eyewitnesses, reference material and worker experience, an assessment of the situation was made without entering the plant. The seriousness of the situation was recognized and level B personal protective equipment (PPE) was specified for the initial reconnaissance team preparing to enter the plant. This satisfied the requirements of the first phase of site characterization.

The initial reconnaissance team, lead by a PWC Guam Environmental Engineer, then entered the plant dressed in level B PPE to determine the extent of contamination based on first hand visual observations and to review the condition of the plant, which had to continue to operate. Based on these observations, it was determined that cleanup crews and plant operators could safely work within the plant if proper PPE was worn. This satisfied the requirements of the second phase of site characterization.

During cleanup, PWC Guam personnel collected samples from surfaces throughout the plant to:

- Confirm the extent of contamination;
- Determine that contamination was not spreading;

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- Confirm cleanup activities were successful; and
- Determine if site conditions were changing, requiring adjustments in the amount and type of PPE required for personnel entering the plant.

After dioxins and furans were identified, the Navy retained the services of experienced professionals from Harding Lawson Associates and VERSAR, Inc. to collect additional samples to more fully characterize the site and assess the situation. Their recommendations were used to amend PPE requirements and plan for future cleanup. VERSAR, Inc. will remain on-site continually assessing the situation until cleanup is completed to insure compliance with the third phase of site characterization.

FINDING D: Testing. The GAO reported that, according to EPA policy (governing PCB spill cleanup for spills occurring after April 2, 1987) restricted access surface areas (such as some of the stairway and walkway areas) contaminated at the Piti Power Plant must be cleaned up to a level of 10 nanograms per 100 square centimeters. The GAO further reported that low level contact areas, such as under the transformer or generators, may be cleaned up to a level of 100 nanograms per 100 square centimeters. The GAO reported that samples taken on May 27, 1987, the day after the spill, and June 15, 1987 showed very high concentrations of PCB--up to 150,000 nanograms per 100 square centimeters, in the directly contaminated areas of the plant. The GAO observed, however, that additional samples taken in July, after extensive cleanup had taken place, showed that PCB contamination in the spill area had been reduced and ranged from traces up to 6,300 nanograms per 100 square centimeters. The GAO reported that no PCB contamination was found outside of the plant. The GAO further reported that air samples taken inside the plant in May, after the spill, indicated that PCBs were present in the air at a rate of 60 micrograms per cubic meter, while the OSHA exposure limit is 500 micrograms per cubic meter.

The GAO observed that the "Navy PCB Program Management Guide," published by the Naval Energy and Environmental

Support Activity (NEESA), considers pressurized releases, such as the one at Piti, to have the potential to generate enough heat to be considered the same as fire-related incidents where dioxins and furans can be generated and tests for these substances should be made. According to the GAO, at the time of the accident the Navy did not consider this pressurized release of PCBs to be a fire-related incident because there was no evidence of a fire or of excessive heat and, therefore, waited 8 days before deciding to test for dioxin and furan contamination. The GAO concluded that this action may have delayed cleanup, but more importantly, may have exposed workers to dioxin and furan contamination. The GAO reported that the PWC did not receive the test results until July 10, which confirmed that dioxins and furans were present, ranging from traces to 3,400 nanograms per 100 square centimeters. The GAO reiterated that anything higher that 10 nanograms per 100 square centimeters has to be cleaned up because it is above the proposed DoD cleanup standard. The GAO acknowledged, however, that subsequent testing showed that dioxin and furan contamination was within acceptable EPA limits for surface contamination. (pp. 4-5, pp. 19-24, p. 36/GAO Draft Report)

<u>DoD Response</u>: Partially Concur. The DoD agrees with the GAO observations and notes that confusion and wide variation in application of exposure standards is a Nationwide problem. However, the cleanup levels are incorrectly reported by the GAO. They should be 10 micrograms per 100 sq cm in restricted access areas and up to 100 micrograms per sq cm in low level contact areas, according to 40 CFR 761.120 (52 FR 10705, April 2, 1987).

FINDING E: Cleanup. The GAO reported that, prior to the discovery of dioxins and furans, the Navy had planned to clean up the spill; however, following the discovery of dioxins and furans, a decision was made to contract for cleanup because the Navy did not have the capability to clean up to the required standards for dioxins and furans. According to the GAO, on August 4, 1987, the Navy issued a notice to the contractor to proceed, which was less than 3 weeks from the time dioxins and furans were discovered, but 10 weeks after the spill. The GAO reported that, from August 21 through 27, 1987, the contractor performed a field investigation, and issued its final report on January 6, 1988. The GAO observed that the contract for the detailed site characterization and for recommending the proper cleanup was awarded on October 14. According to the GAO, the contractor and Pacific Division officials met with EPA Region 9 officials on December 7, 1987, to review the test

Now on pp. 3, 14-17. See comment 3.

and sampling plan to be used in characterizing the site, with which the EPA subsequently agreed. The GAO found that full characterization was completed in March 1988. The GAO also noted that, using this data, the Navy will contract with another contractor for final cleanup. The GAO reported that, as of January 1988, PWC officials estimate that the costs for the spill and its cleanup have reached \$3 million and could reach as much as \$10 million. (pp. 24-25/GAO Draft Report)

<u>DoD Response</u>: Concur. However, cleanup costs are now expected to reach about \$6 million rather than \$10 million, based on a cleanup contract awarded May 10, 1988.

FINDING F: Occupational Safety and Health Administration (OSHA Inspection. The GAO found that the OSHA regional representative did not learn about the spill until the last week of September, when a copy of the EPA response to a letter received from Guam's Senator Nelson was received. The GAO observed that this occurred because there is no requirement to notify the OSHA of a PCB spill. The GAO noted that upon cleaning of the spill, the OSHA then conducted an inspection of the PCB spill site and found no violations because of corrective actions already taken by the Navy. (p. 26/GAO Draft Report)

DOD RESPONSE: Concur

FINDING G: Training requirements. The GAO pointed out that the OSHA regulations requires that employees exposed to hazardous substances, health hazards, or safety hazards receive training at the time of job placement. According to the GAO, these regulations cover employees engaged in emergency response or post-emergency response operations after the release of hazardous substances. The GAO reported that the required training includes a minimum of 40 hours of initial instruction off the job site and a minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor. The GAO further reported that, in addition, workers who may be exposed to unique or special hazards shall be provided additional training. The GAO added that the OSHA regulations also require supervisory personnel to have at least additional eight hours of specialized training on managing the hazardous substance operation. (p. 5, pp. 27-28, p. 37/ GAO Draft Report)

DOD RESPONSE: Concur.

Now on pp. 3, 18-20.

Now on p. 18.

See comment 4.

FINDING H: Emergency Response Crew Training. The GAO reported that Navy records indicated 34 individuals were listed as emergency response personnel, which included both cleanup/decontamination and cleanup/support personnel. According to the GAO, the 24 cleanup/decontamination individuals (1) were from the pest control shop, (2) were considered to be the PWC trained hazardous waste handlers and (3) were directly involved in the actual cleanup of the PCB oil. The GAO found that 22 of these individuals had received at least 40 hours of hazardous waste training, but the other two had received no training. The GAO reported that there was no record of whether the three days of OSHA field supervision required had been provided to any of the 24 individuals. According to the GAO, the remaining ten individuals supported those who were actually performing cleanup of the PCB liquid, including a safety engineer, an industrial hygienist, two crane operators, and the foreman for the pest controllers. The GAO found that seven of these individuals had no training in hazardous substances operations, three had at least 40 hours, including the pest control foreman, who had numerous training courses and had received the required supervisory training needed to manage hazardous substance operations at the beginning of the incident. (p. 5, pp. 28-29, p. 37/GAO Draft Report)

DOD RESPONSE: Concur.

FINDING I: Cleanup Workers Training. The GAO reported that 222 employees have entered Piti Power Plant since the spill. The GAO found that, of the 188 who were not listed as emergency response members, nine had received training in hazardous substance handling, response, or management prior to entering the plant. According to the GAO, the PWC had no record of any of these individuals receiving the required 3 days of field supervision. (p. 5, p. 29, p. 37/GAO Draft Report)

DOD RESPONSE: Concur.

PINDING J: Hazardous Substance Training. The GAO reported that, on September 18, 1987, a contract was awarded to provide training in hazardous substance incident response to those individuals who have entered and will continue to enter the Piti Power Plant. The GAO noted that this instruction commenced on October 5, 1987. The GAO reported that the course is designed to provide PWC personnel engaging in hazardous substance response and cleanup operations with the training required by the OSHA under the hazardous waste operations and emergency response standards. (p. 5, pp. 29-30, p. 37/GAO Draft Report)

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Now on pp. 3, 20, 23.



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DOD RESPONSE: Concur.

FINDING K: Current Plant Operations. The GAO reported that, because of the potential for contamination, the Navy requires plant operators to wear personal protective equipment whenever they enter the plant to continue its operation. According to the GAO, before entering the plant, operators must be outfitted with the proper personal protective equipment in the entrance way to the new decontamination and when the facility employee completes his/her shift, the employee exits through a separate part of the decontamination facility where decontamination procedures are undergone. The GAO observed that, according to Navy officials, the proper personnel protective equipment has significantly reduced the chances of the plant operators being contaminated during plant operations. (pp. 30-31/GAO Draft Report)

DOD RESPONSE: Concur.

FINDING L: Storage and Disposal of PCB Waste. The GAO found that the contaminated transformer and other pieces of equipment and materials, used to clean and decontaminate the area, have been sent to the Defense Reutilization and Marketing Office (DRMO) for disposal. The GAO noted that, because of the large volume of contaminated items, a significant amount of the items have been stored outside pending shipment to a California disposal facility. The GAO also found that, in an October 1987 inspection report, the EPA criticized the DRMO for storing the contaminated transformer outside in a temporary storage area for more than 30 days. The GAO observed that, on November 30, the DRMO sent the first shipment of contaminated articles to California. The GAO further observed, however, that because of the large volume of contaminated waste, the DRMO continues to receive from Piti additional shipment to disposal facilities will be necessary. (p. 31/GAO Draft Report)

DOD RESPONSE: Concur.

FINDING M: Navy PCB Transformers. According to the GAO, since December 1985, the Navy has eliminated about 1260 PCB Transformers. The GAO reported that, in May 1986, before the Piti spill, the Chief of Naval Operations instructed all major commands to replace PCB equipment in poor condition or with a potential for serious health, environmental, or mission impact. The GAO reported that the PWC Guam then set

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Now on p. 21.

Now on p. 20-21.

a schedule to replace all of its PCB equipment by FY 1991, at a cost of about \$2.9 million, and had planned to replace the transformer at Piti (which leaked PCBs) in FY 1989 for about \$51,000. The GAO noted that, as a result of the spill from this transformer, the Navy will now have to spend about \$10 million to clean up the site. The GAO reported that the PWC Guam has initiated actions to accelerate the replacement of other PCB transformers at the base. The GAO further reported that the Navy tested the other 2,000 KVA transformer at Piti found it as also susceptible to the same kind of accident; as a result, both PCB transformers (including the one that leaked) have been temporarily replaced with portable non-PCB transformers located outside the plant. (pp. 6-7, pp. 32-33/GAO Draft Report)

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<u>DoD Response</u>: Concur. The DoD again notes that the cost of cleanup is now expected to be about \$6 million.

- FINDING N: Lessons Learned. The GAO found that, because the PWC Guam was one of the first Navy installations to have a spill covered by both the December 1986, OSHA and the April 1987, EPA regulations concerning the cleanup of PCB spills, the PWC Commander issued a memorandum stating the lessons learned and made recommendations to solve the problems. According to the GAO, a limited number of the lessons learned at Piti were also cited by the Commander of the Naval Rework Facility, Norfolk, as lessons learned after the PCB fire there. Examples of the lessons learned at Guam are, as follows:
 - Emergency responses for hazardous substances spill should be limited to containment only.
 - The OSHA considers only saranex-laminated coveralls as adequate protection for liquid PCB cleanup.
 - The PWC started PCB cleanup prior to determining if dioxin or furans were present.
 - There are currently no standards for dioxin and furan cleanup.
 - The OSHA regulations concerning employee safety for hazardous substance cleanups are not clear. (pp. 34-35, pp. 83-89/GAO Draft Report)

DOD RESPONSE: Concur.

o <u>FINDING O: Navy Procedures.</u> The GAO reported that officials from the Naval Facilities Engineering Command

Now on pp. 22-23, 51-54.

Now on pp. 4, 21-22.



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Environmental Office considered the existing regulations and guidelines, which were revised in 1986 and 1987, adequate for shore activities to use when cleaning up hazardous waste spill. Although recognizing that there have been a number of fire-related or pressurized releases of PCBs during the last 2 years and the bases have had some problems in responding. The GAO reported that the problem is perceived by the Navy as a case of failure to implement the existing regulations and guidance, not a case of inadequate regulations and guidance. The GAO observed that the Navy does not, therefore, plan to revise any regulations or guidance. (p. 35/GAO Draft Report)

DOD RESPONSE: Concur.

- FINDING P: Regulations Governing Worker Safety. The GAO reported OSHA regulations require heads of Federal agencies to furnish each employee a place of employment free from recognized hazards that cause, or are likely to cause, death or serious physical harm. The GAO further reported that the Occupational Safety and Health Standards govern worker safety during PCB spills, such as occurred at the Piti Power Plant, as follows:
 - The PPE shall be used, which will protect employees from hazards they are likely to encounter, based on performance characteristics of the PPE relative to the requirements and limitations of the site, the task specific conditions and duration, and the hazards and potential hazards at the site.
 - All PPE shall be of a safe design and constructed for the work to be performed.
 - Prior to entry into a hazardous waste operations area, a preliminary evaluation of a site's characteristics shall be performed by a trained person to aid in the selection of appropriated employee protection methods.
 - During site entry, a more detailed evaluation of the site specific characteristics shall be performed by a trained person to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and PPE for the task to be performed.

The GAO also reported that the Navy PWC Guam Instruction 5090.5A, "PWC Guam Oil and Hazardous Waste Management and Spill Contingency Plan," lists an impermeable suit as the coverall required for cleanup of hazardous material. In addition, the GAO commented that the Naval Energy and

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Environmental Support Office PCB Program Management Guide states that all workers, who may be exposed to PCBs, should be equipped with chemical protective clothing to insure their protection and recommends that, if exposure to liquids is anticipated, the outer coveralls should be made of chemically resistant materials such as saranex-coated tyvek or vitor-coated neoprene. (pp. 40-41/GAO Draft Report)

DOD RESPONSE: Concur.

FINDING Q: Use of PPE During the Accident. The GAO reported that, during and immediately after the PCB spill, there was confusion as to the source of oil and many of the individuals who were in the plant at the time were unaware that the transformer contained PCBs and, therefore, worked in a potential dangerous situation. The GAO also reported that, in addition, plant employees had not been told what to do in case of a spill. The GAO observed that, because some employees did not know that the failed transformer contained PCBs, personal protective equipment was not an initial consideration. The GAO found that, once the PWC determined the oil contained PCBs, most of the employees were evacuated from the plant. The GAO concluded, however, that based on the medical records it reviewed, some workers stayed in the plant for a significant time with no PPE. (pp. 5-6, pp. 43-44. pp. 53-54/GAO Draft Report)

DoD Response: Concur.

FINDING R: Recommended PPE Unavailable. The GAO reported that the National Institute for Occupational Safety and Health (NIOSH) recommends that, if exposure to liquid PCBs is anticipated, workers should be equipped with coveralls made of chemically resistant materials, such as saranex coated tyverk or viton-coated neoprene. The GAO observed that, when dealing with liquid contaminates, the NIOSH does not recommend the use of uncoated tyvek, such as that worn by the PWC response crew when first entering the contaminated plant. According to the GAO, the Navy had incorporated this guidance into its "PCB Program Management Guide 1981," which the Pacific Division (in turn) incorporated into its instruction entitled, "Management of Polychlorinated Byphenyls." The GAO noted that PWC Guam uses this instruction as the basis for its management of the PCB inventory. The GAO concluded, however, that the Navy could not have followed the PPE guidelines, because its supply system did not carry the saranex-coated tyvek overalls. GAO further concluded that, as a result, there were no saranex-coated tyvek coveralls available on Guam when the Piti spill occurred. The GAO noted that contracting

Now on pp. 3, 27-28, 33.

Now on pp. 26-27.

procedures were subsequently started and the PWC received the first delivery of coveralls 5 months after the need was first recognized.

The GAO also reported that the OSHA regulations state that PPE should include chemical-resistant boots with steel toe and shank, which were also not available on Guam and were not worn by the PWC emergency response crew. The GAO found that, instead, the response team wore three layers of plastic bags over work shoes. The GAO concluded that some of the employee shoes may, therefore, have been contaminated during the cleanup effort. (pp. 44-48/GAO Draft Report)

DOD RESPONSE: Concur.

FINDINGS S: Possible Concentrations in the Air: Use of Respirators. The GAO observed that those individuals in the 0 plant at the time of the accident described a fine mist in the air and most of those described breathing problems as a result of being in or near the mist. The GAO observed, however, that the Navy did not monitor for airborne concentrations of dioxins and furans during the incident and early part of the cleaning. The GAO concluded, therefore, that because of this delay, it is not possible to tell if any concentrations were excessive during the early part of the response and cleanup. The GAO reported that the workers at the spill site changed the types of respirators they used several times during the response and cleanup. The GAO found that, on May 26, 1987, the emergency response crews entered the plant, with self-contained breathing apparatus. The GAO further found, however, that on May 27, one day after the accident, the PWC replaced the apparatus with half-face respirators and, for those individuals not using solvents, the requirement for any type of respirator was deleted by June 3. The GAO observed that, at the time of its on-site review, because of the discovery of dioxins and furans, individuals going into the plant were again being required to wear full-face respirators. (pp. 48-49/GAO Draft Report)

DOD RESPONSE: Concur.

FINDING T: Civilian Clothing Worn Under PPE. The GAO found that, during the emergency response to and cleanup of the contaminates, the workers wore civilian clothes under the PPE because the recommended undergarments were not available. (The GAO noted that since the tyvek coveralls were transparent, it was necessary to have some type of undergarment.) The GAO reported that, according to the workers involved, it was not uncommon for the contaminated

Now on pp. 28, 30.

Now on p. 30.



oil and solvents to penetrate the tyvek coveralls and soak through the workers' clothes. The GAO noted that the contractor, hired by the Navy to evaluate the PPE used by workers in the plant, concluded that, although employees wore half-mask respirators with organic vapor/pesticide and high-efficiency particulate air filter cartridges, the solvents, PCBs, dioxins, and furans may have soaked through the uncoated tyvek suits clothing and may have contaminated cleanup workers, leading to potential skin absorption of the contaminates. The GAO further reported that, according to PWC officials, although they verbally offered to test any workers' possessions, such as clothing, shoes, automobiles, and homes or their family members, only a few workers responded and those requested their autos be tested. According to the GAO, the test results from the automobiles were negative or showed only very minute traces of PCBs. (pp. 5-6, pp. 49-50, pp. 53-54/GAO Draft Report)

DOD RESPONSE: Concur.

FINDING U: PPE Worn By Plant Operators and Support a Personnel. The GAO reported that controllers, who are responsible for reading and maintaining the power gauges for proper plant operation, were originally sent into the plant about two hours after the accident wearing PPE similar to that of the response crew, except that half-mask respirators and only two layers of surgical gloves without neoprene outer gloves were used. The GAO found that this same PPE was used until June 3, when they were allowed to enter the control room without respirators. The GAO further found that, on June 8, tyvek coveralls were eliminated from their PPE because they were not in contact with the contamination. The GAO reported that other employees who entered the plant, between the time of the accident and the discovery of dioxins, such as maintenance crews or inspectors, used many combinations of PPE depending on their location and function within the plant. The GAO added, with the discovery that dioxins and furans were present in the PCB oil, the PWC increased all PPE worn within the contaminated areas of the (pp. 51-53/GAO Draft Report) plant.

<u>DoD Response</u>: Concur. The PPE was specified to be commensurate with the hazards that the various groups of personnel were expected to encounter. The PPE was increased as a precaution after the finding of dioxins and furans.

FINDING V: Employee Exposures Varied. The GAO found that, of the 66 employees in the PiTi Power Plant when the PCBs were released, 29 came into direct contact with the spill. The GAO reported that, within 3 days, 50 of the 66 were

Now on pp. 3, 31-33.

Now on pp. 35-36, 44.





medically examined, which included checking vital signs and respiratory functions, taking blood samples, and establishing a medical monitoring program for each individual. The GAO added that an additional nine employees did not request a medical examination until after July 1, 1987, and one employee did not request one until October The GAO further found that, on May 27 and 28, at the 1987. request of medical officials, all employees who had been in the plant at the time of the accident or thought they may have been close enough to the plant to be exposed to PCBs were asked to report to the hospital for examinations. The GAO reported that, eventually, 27 people reported to the hospital stating that they had been inside the plant at the time of the accident, with six not reporting for examinations until September and one not until October. GAO noted that, in addition, just to be on the safe side, all Navy employees who thought they may have been exposed to PCBs were asked to report for medical examinations. observed that, as a result of these Navy efforts, the number of employees who requested examinations reached 251. GAO concluded that the medical monitoring program is in line with OSHA regulations and Navy guidance. (pp. 55-58, pp. 71-72/GAO Draft Report)

DOD RESPONSE: Concur.

FINDING W: Medical Monitoring Regulations and Guidance. The GAO reported that the Navy Energy and Environmental Support Activity's Hazardous Substance Spill Contingency Planning Manual" requires, that all on-scene operations and cleanup team personnel, also work with or near hazardous substances be provided continuous medical monitoring, including a replacement physical exam to establish a personal physical baseline. The GAO further reported that, in addition, the "Guam Site Specific Health and Safety Plan for Pity Power Plant" states that all PWC personnel who operate the power plant or work in the PCB clean-up shall participate in a medical monitoring program, to be initiated when an employee starts work and continued on a regular basis. Moreover, the GAO noted the National Institute for Occupational Safety and Health Bulletin 45 states that a medical surveillance program should be established to prevent or detect, at an early stage, adverse health effects in workers resulting from exposure to PCBs. The GAO also observed that medical and work histories should taken for each worker prior to job placement (to establish a baseline) and updated periodically. (pp. 59-60/GAO Draft Report)

DOD RESPONSE: Concur

Now on pp. 37-38.

Now on pp. 37-38, 43.



FINDING X: Delays in Examining Employees. The GAO for that after dioxin and furans were identified, all 251 0 Delays in Examining Employees. The GAO found employees who had reported for medical examinations were included in the medical monitoring program. According to the GAO, the Navy planned to include only those individuals who had been directly contaminated and those involved in the cleanup and decontamination. The GAO found, however, that 73 employees involved in the cleanup or operation of the plant, were not given baseline examinations or had not received the required periodic examination for over a year. The GAO concluded that the delay resulted from (1) the lack of resources (funds, equipment, and personnel), (2) not following set procedures and (3) not monitoring implementation of the procedures. The GAO further concluded that, because the Navy did not know the medical conditions of these employees at the time of the accident, it may be difficult to determine if there are any long-term effects on the health of these individuals. (pp. 7-8 pp. 60-62,p. 71-72/GAO Draft Report)

<u>DoD Response</u>: Concur. The DoD agrees that 73 people were not initially evaluated for short term health risks and that lack of resources was a factor. However, with the exception of chloracne, the medical profession, to date, has not established any statistically or clinically significant long term health risks from acute (short term) exposure to PCBs.

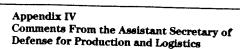
FINDING Y: Effects of PCBs on Humans: Naval Hospital's Long-Term Study. The GAO presents a general outline or the effect on humans of exposure to high levels of PCB, as well as the effect of exposure to dioxins and furans. The GAO recognized, however, that there are differences of opinion on the effects of PCBs on humans, but did specify that PCBs are considered human suspect carcinogens. The GAO reported that, as a result of the PCB spill, the Naval hospital on Guam has begun implementing a long-term medical study of those individuals who are included in the medical monitoring program. According to the GAO, the purpose of the study is to determine the long-term effects of exposure to PCBs on humans. (pp. 62-65/GAO Draft Report)

<u>DoD Response</u>: Concur. While valuable documentation may result from this study, it is anticipated that it will be consistent with other well controlled epidemiologic studies, which have failed to substantiate any long term health hazards to humans from acute (short term) PCB exposure.

FINDING 2: Testing for PCBs in the Blood. The GAO reported that, according to Navy officials, there is no set safe level for PCBs in an individual's blood and people with a PCB blood count of as low as 10 parts per billion have

Now on pp. 4, 38-39, 44-45.

Now on pp. 39-40.



experienced problems. The GAO reported that the results of the PCB blood tests on PWC individuals indicate there are two PCB derivatives (Aroclors 1242 and 1260) present in the employees blood streams. The GAO commented that study evidence on Aroclor 1260 shows it is likely to cause cancer. The GAO also noted that, in many cases, aroclor 1242 showed up at much higher concentrations in the employees blood than aroclor 1260, even though the aroclor released from the Pititransformer was 1260. The GAO observed that the Navy does not know if the PCB 1260 is from Piti or whether the employees have picked it up from some other source, nor is it known where the employees got the PCB 1242.(pp. 66-69/GAO Draft Report)

DOD Response: Concur. There is no generally recognized safe limit for serum PCB levels. Furthermore, there has been no established relationship between PCB exposure and serum PCB levels. The production of liver cancers has been demonstrated in experimental animals following injection of both AROCLOR 1242 and 1260. However, the relevance to humans of these studies has not been demonstrated.

- FINDING AA: Medical Problems Experienced. The GAO observed that nine employees included in the medical monitoring program have been notified physical examinations showed their triglycerides levels were greater than normal and possibly are PCB-related. The GAO reviewed the medical complaints of 104 employees, who complained of incident-related medical problems, and found that 43 had experienced one or more of the following:
 - breathing or throat irritation;
 - nausea or diarrhea;
 - eye irritation;
 - dizziness or headaches; and/or
 - rash or skin irritation.

The GAO concluded that it was impossible to determine those specific medical problems caused by the PCBs and those caused by a combination of the PCBs and the chemicals used for clean up or from some other unknown cause. The GAO pointed out, however, that most of the employees who complained were those directly exposed or in the cleanup crews. The GAO observed that most of the symptoms lasted only a short time; although in two cases, the medical problems lasted for more than a month. (pp. 69-70/GAO Draft Report)

Now on pp. 43-44.

Now on pp. 41-43.





DOD RESPONSE: Concur.

o <u>FINDING BB:</u> Testing Family Members. According to the GAO, the Navy is not required to test for PCB blood levels in employee family members and does not plan to test any family members, since the Navy contends there is very little chance for the contaminates to have reached the employee homes. The GAO again confirmed that only traces of PCB or none at all were found in those employee personal automobiles tested. (p. 71/GAO Draft Report)

 $\underline{\text{DoD Response:}}$ Concur. The medical findings listed from the acute exposure to PCBs are consistent with information previously reported in the clinical literature.

RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that the Secretary of the Navy determine the feasibility of having pre-negotiated testing, sampling, and detailed characterization contracts available at all installations using PCB equipment.

(p. 37/GAO Draft Report)

<u>Dod Response</u>: Concur. A panel of senior safety, health and environmental protection personnel, representing headquarters commands is being tasked to review the Department of the Navy PCB elimination and control program. A meeting was held July 27, 1988, to draft the charter and identify panel members. The panel will be convened in August. The panel members will assess the feasibility of having a pre-negotiated contract ready to respond to any possible future incidents involving PCB. The results of the panel deliberations are expected to be available by November, 1988.

RECOMMENDATION 2: The GAO recommended that the Secretary of the Navy ensure that the required training is provided for employees working in a potentially hazardous situation (such as at the Piti Power Plant), so they are aware of the potential dangers and what they should do if a problem arises. (pp. 37-38/GAO Draft Report)

<u>DoD Response</u>: Concur. The Navy helped develop the DoD training program to implement the OSHA Hazard Communication (HAZCOM) Program (29 CFR 1910.1200). This training initiative is to be implemented DoD wide by February, 1989. All agencies are in the process of updating their inventories of materials used in each work area to ensure all potentially hazardous materials are identified and

Now on p. 44.

Now on p. 24.

Now on p. 24.



included in the HAZCOM training plan. The senior panel will emphasize the need to ensure that OSHA PCB training requirements (29 CFR 1910.1200) are included in the HAZCOM program.

o <u>RECOMMENDATION 3:</u> The GAO recommended that the Secretary of the Navy have the Navy Supply Command [Naval Supply Systems Command], in line with OSHA and Navy regulations, stock the required personal protective clothing in a readily accessible location. (p. 54/GAO Draft Report)

<u>DoD Response</u>: Concur. The senior panel will review the PCB unique protective clothing requirements. Special emphasis will be given early in the review to ensure the clothing is readily available to field activities. Guidance will be drafted, as necessary, to try to get all of the items into the standard stock system for easier access by the activities. The result of the panel's review is expected to be available by November 1988.

RECOMMENDATION 4: The GAO recommended that the Secretary of the Navy emphasize the requirement [OSHA basis] for employees who work in hazardous conditions to receive baseline medical examinations prior to entry into the workplace and receive the regularly scheduled medical examination. (p. 72/GAO Draft Report)

<u>DoD Response</u>: Concur. The Chief of Naval Operations and Commandant of the Marine Corps were be reminded, in a memorandum of July 28, 1988, to emphasize to their field activities the importance of doing baseline physical examinations on personnel who will work in hazardous conditions. The senior panel will develop additional guidance, if needed.

Now on p. 33.

Now on p. 45.

The following are GAO's comments on the Department of Defense letter dated August 5, 1988.

GAO Comments

- 1.A draft of this report stated that PCBs were released by a pressure release plug designed to relieve pressure on the transformer termination box. DOD commented that information obtained subsequent to our audit indicated that the PCBs were released through a split in the side of the termination box. We have changed this section of the report to reflect DOD's comment.
- 2.A draft of this report stated that PWC did not make a site characterization of the spill area before the emergency response and cleanup crews entered the plant. DOD commented that the site characterization was made in three phases. Records we reviewed had been prepared interpreting OSHA's regulations incorrectly. We have revised this section of the report to reflect that the site characterization was made.
- 3.A draft of this report stated that the EPA required that the contaminated area be cleaned up to 10 nanograms per 100 square centimeters in restricted access areas and to 100 nanograms per 100 square centimeters in low-level contact areas. DOD commented that we had incorrectly reported the standards. We have revised that report to show that EPA's standards are 10 micrograms per 100 square centimeters and 100 micrograms per 100 square centimeters.
- 4.A draft of this report stated that the total cleanup costs for the spill would reach \$10 million. DOD commented that the revised cleanup cost estimate was \$6 million. We revised the report to recognize the lower estimate.

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PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

AN ACT TO APPROPRIATE THE SUM OF ONE HUNDRED THOUSAND DOLLARS (\$100,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES AT THE PUBLIC WORKS CENTER, NAVY, GUAM, AND TO ESTABLISH

AN EMPLOYEES' PCB RECOVERY FUND.

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|--------------------------------|-----------------|--------------|
| 1. Estelita de Thomas | 054-72-7863 | June 8, 1989 |
| 2. TRINGO V. CARDENAS | 586-66-6752 | Juae 8, 1989 |
| 3. JOHN LIE | 586842623 | JUNES 1989 |
| 4. antabeljade | 586-64-0885 | June 5/954 |
| 5. Jan Hwa Jong | 586-68-0063 | June 8, 1987 |
| 6. You-lee Kim U | 586-66-7277 | 6/0/09 |
| 7. Major a M. Soule | 321-289-241 | 6.18/89 |
| 8. Dung () both | 98.62 409V | (1) 4) 48 |
| 9. has see | 586 - 66 - 6446 | 6/8/37 |
| 10. Lane Q. Pere | 586-01-2543 | June & 1989 |
| 11. Prefina C. Taitam | 186-05-9201 | ,, |
| 12. For a. Wong | 586 - 70 - 4133 | JUNE 8,1989 |
| 13. Suspina Milari | 584-84-1009 | June 8, 1989 |
| 14. Harry Albert | 0b-400539 | June 8,1989 |
| 15. Dussemmens | 385-38-1641 | Hur 8/988 |
| 16. B. Rohand | 558-37-3285 | June 8/89 |
| 17. Jandes pr Crusustomo | 586-66-9282, | June 8, 1980 |
| 18 Derander Claire San Vico Az | 586-66-8381 | June 8, 1989 |
| 19. Rosalva P. San Micolos | 386-66-8362 | June 8, 1989 |
| 20. D'Milia B. Yary | 586-76-2024 | pore 8/1989 |
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PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

AN ACT TO APPROPRIATE THE SUM OF ONE HUNDRED THOUSAND DOLLARS (\$100,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES AT THE PUBLIC WORKS CENTER, NAVY, GUAM, AND TO ESTABLISH

AN EMPLOYEES' PCB RECOVERY FUND.

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| NAME: PRINT & SIGN 1 TESSE & SANOTIAGO Jesse Santago | 566-80-2085 | 6-10-89 |
| 2. Andrew Bersamin andrant | 586-74-4245 | 6-10-89 |
| 3. ALICIAS. PAINTER CICLOS. | p, per fy | 6-10-89 |
| 4. Lita A. Gairlon Agaular 5. Maria C.R. Pranso 6. NOEL ESPULGAR Arlger | 186-76-6671 | 6-10-89 |
| 5. Maria C.R. Brange | 596-70-8638 | 6-10-59 |
| 6. NOEL ESPULGAR Anger | 506-71.2577 | 610-69 |
| 7. Ferdinad Donings Amyo | - 586-78-6696 | 6-10.89 |
| | | 6-10-50 |
| 9. Robert S Avceo, Politique | 586-78-5623 | 4-10-89 |
| 10. J. S. A DUELAS JSA | 586-44-1584 | 10 Jun 89 |
| 10. J. S. L. DUELAS JESA 11. J. Hard D. Jungman | - 586 - 07 - 0193 | 6-10-87 |
| 12. This S. Baleta | 586-05-5222 | 6-10-89 |
| 13. Frenéil Macalma fluacalma | 586 -76 - 1728 | 6/10/8g |
| | 366-74-1485 | 6-10-89 |
| 14. MENU SANDY C. MINDEMORY C. 15. JOSEPH WALKERING 15. JOHNAPOU C. NARANJO 16. FRUELSO ('NELLE) | 586-68-9145 | 6-10-85 |
| 16. FRUELS ('NEMANTO | 586 72 3726 | 6-10-89 |
| 17. Jens C. PALDONADO Para | 586-72-3425 | 6-10-59 |
| 18. Helma Jamie as Vonc | J46-93-3208 | 6-10-49 |
| 19. Y. KAJIWARA- 20. ROLAND F. INBAY: Kal. J. S. | 586 263 487 | 6.10-89 |
| 20. ROLAND F. INBAY: Kal. J. | 586-66-6887 | 6-10-89 |
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PETITION TO THE TWENCHETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

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AN EMPLOYEES' PCB RECOVERY FUND.

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| | 1 | _ |
| 1. CULOGOU IS PHLAN ESGLE | | 6-8-89 |
| 2. Mary Bordelon | 586-09-0895 | 6-8-89 |
| 3. Kalem & Warren | 586-64-7306 | 6-8-89 |
| 4. Jet Chaco | 586-64-8377 | 6-8-57 |
| 5. John Meno - John Meno | 586-03-4014 | 10-8-89 |
| 6 Clugues M. Mind | 43-418 | 8-8-87 |
| 7. Mathe Villagorney | 789-586-01-9621 | l i |
| 8. Kalist R. Rediencel | 586-68-5261 | 6-8-87 |
| 9. Leonila Denovente | 564-58-7989 | 6-8-89 |
| 10. Jose D Rongeln | 586-07-6345 | 6-8-89 |
| 11. althong Clangeliners | 586-09-6345 | 6-8-89 |
| 12. John Dangelinus | 5.86017122 | 68-89 |
| 13. Logo 190 Janes | 586727366 | 6889 |
| 14. Jose Maj tesse / WIN | | 6-8-89 |
| 15. King & Prinking | 557-42-8270 | 6-8-89 |
| | 118-38-9240 | 6-8-89 |
| 16. Dim Whill 17. Fleanon P. Cruz | 586-05-8345 | 6-8-89 |
| 18. Celestilde hr. Bamba | 346-50-9375 | 6-8-89 |
| 19. Loves M. Loves | ct. 26742 | 6-8-89 |
| 26. Insule (Mesi | V86-UV-2404 | 6-8-89 |
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PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

AN ACT TO APPROPRIATE THE SUM OF ONE HUNDRED THOUSAND DOLLARS (\$100,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES AT THE PUBLIC WORKS CENTER, NAVY, GUAM, AND TO ESTABLISH

AN EMPLOYEES' PCB RECOVERY FUND.

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| NAME: PRINT & SIGN Cucilia & Bas 1.Cecilia G. Bas | 586-01-5357 | 6/9/89 |
| BEN DEL ROSPOTO POR | 186.66.2470 | Wal.89 |
| 3. Pestina. Centra | 586-05-8956 | 6/9/19 |
| 4. Nois M. Danistones | 586-09-1329 | 6/9/89 |
| 5. JOEAGUON De aga | 586-01-1630 | 6/9/89 |
| 6. Richard L. Gollo Roul | 586 01 1731 | 6/9/89 |
| 7. MARIA I. TENDELO | 586-03-2887 | 6/9/89 |
| E. JESUSA SIN. SANTOS Janles | 556-05-6987 | 6109/89 |
| 9. Doloves B. Jamacho | 586-01-1572 | 6/9/89 |
| 10. Vicki Change Ho (pp los m. fauliono | 100 42 8509 | 6-9-89 |
| 11. Hug- | 586-07-9365 | 6/9/89 |
| 12. RANAME. FRAZIER PROFIL | 5-8605-2515 | 6/9/83 |
| 13. Vicente C. Babauta Debauta | 586-72-4891 | 6/9/89 |
| 14. DOWN assyration | 586 68 5172 | 6/9/89 |
| VIEW CON I TOOK AS | 586-68-5193 | 6/7/89 |
| 16. Without D. Partitus | 586-72-6496 | 6/9/89 |
| 17. Frank P. Silfun | 586-01-1925 | 618/89 |
| 18. ANYDO QUENTE | 1 | 0/2/89 |
| | 5-86-68-1800 | 6/19/87 |
| 20. Paul P. Chark | 386-07-7844 | 6/9/89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|---|-----------------|----------|
| 1. ROBEL A. AGANG Rogel Agoma | 586-68-9147 | 6/9-89 |
| 2. JOSE F. SANTOS Glantes | | 6/9-89 |
| 3. Alfred C. Borja Coful Be | 4 | 6/10/89 |
| 4. JOAQUIN FBLAS JORGEE BL | | 6/10/89 |
| 5. JOAQUIN E-TAITINGFORG PAITS | 562483539 | 6/10/59 |
| 6 Ala C Bld S ana Cholus | 1 _ | 6/12/89 |
| 7. Kenneth 3. 30mg Kenneth B. Bay | 584-76-2840 | 6/12/89 |
| 8. Anita B. Dorga (Into B. Boy) | 586-62-9422 | 6/12/89 |
| 9. Therese Borja Shusse Borga | 586-74-4431 | 6/12/89 |
| 10. mal C. Cumacho Mas C. lancos | 586.68-8740 | Ce/12/89 |
| 11.1/1CFNTE A. CANIAGED Brust JOAQUIN A. CAMACHO 12 Mary C. Camacho | C.D. 25714 | 6/12/89 |
| 12 Maguin A. CAMACHO | 562-54-5404 | 6/12/59 |
| 12 Joanna a. Camacho 12 Chilissa L. Camacho 13. Chinosa a. Lamacho | 584-86-1843 | 4/12/89 |
| 14. Lucilla C. Blas Blor | 586-66-4012 | 6/12/89 |
| 15. FRANCISCO BBuley work . | 586-07-7651 | 4/12/89 |
| | 586722983 | 6/12/29 |
| 16. Benny T. Balauto 17. ROBERT SANTOS | 584 68 3697 | 6-12-89 |
| 18. Amada a Herte OREGGIST FAGAS 19. Lym T. Food | 586-64-3204 | 6-12-89 |
| 19. Lym T. Tool | 586-07-0290 | 6-12-89 |
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| PACITICO S. CAMIL | | |

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| 1. | | |
| 2. Roy C. MENDION | 586729643 | 6-8-89 |
| 3. Timotes halampe VI- | 586-05-2371 | 6-3-89 |
| 4. Tony & Folicare | 586-64-3132 | 6-8-89 |
| 5. Ricardo e aguiogue | 119-34-0207 | 4-8-89 |
| 6. AUIN B SANTOS | 586-09-0717 | 6-9-89 |
| 7. ELNOST G. CANDOLLETZ | 58660 9419 | 6-9-89 |
| augustine M. Cohicepe ione | 184, 68.1259 | 6.9.89 |
| 9. Augustino M. Lenceprion | 586-07-6495 | 6-9-89 |
| 10. Benny he. Reyes | 586-05-1464 | 6-9-89 |
| 9. Augustino M. Lencepsien BENNY M. REYES 10. Benny fu. Reyes 11. LNITE Z. PENDON | 186-72-4817- | 6-11-89 |
| 12. Gelie & Penden | 186-01-4609 | 6-11-89 |
| 13. Leonarda 5 Pendon JOSEPHINE D. PALACIOS | 586 - 64 - 5715 | 6-11-89 |
| 14. Phalacias Thelma H. Ke. th | 586 - 05 . 2/29 | 6-12-89 |
| 15. Thelma of Keith | 586-66-3242 | 6-12-89 |
| 16. Coryon S. Heaville | F86- 70-9071 | 6-12-59 |
| 17. Silia es Quel | 576-46-9760 | 6-12.89 |
| 18. AURORA M. ROXAS | 586-09-4091 | 6-12-89 |
| 19. T. PROLICE O LIBERTY M. CUETO | 586-03-9742 | 6-12-89 |
| 20. Likerty m. Cueto: | 586 - 09-2367 | 6-12-89 |
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| NAME: PRINT & SIGN (A / | SS OR ID NUMBER | DATE |
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| NAME: PRINT & SIGN 1. Kiml Magnas Olyllahar | 575-96-3349 | 6-11-89 |
| 2. Aldonie | 05/5494 | 6/4/85 |
| 3. Trindad C. Guerrara | | 6/11/89 |
| 4. Bunly G. Cry | 518-44-7182 | 6/4/85 |
| 5. GREGORD Pales en Cuer | (| 6-11-89 |
| 6. Halfre Dung | 586-62-1399 | 6-11-89 |
| 7. ANTONIO G. Soll Ficolas | 586-05-1309 | 6/1/89 |
| 7. Autorio G. Soft Ficolas E. Maria L. Diones | 586-01-1672 | 6/11/89 |
| 9. manuela 7. Resligio | 586-01-6773 | 6/11/89 |
| 10 Catalina S, Durfrocho | 205-42-7960 | 6/11/89 |
| 11. Vicente T. San Wiel- | 586-01-1334 | 6/11/89 |
| 12. Juana a, San Hoef | 586-64-1108 | 6/11/89 |
| 13. Chizabeth S. Franguer | 1586-03-4582 | 6/11/89 |
| 14 Of min W. Ogal) | 586-07-0440 | 6/4/89 |
| 15. Menny N. Canpus Je. | 576 057545 | 6/11/89 |
| 16. Michelle San Nicolas | 886 40 12 538 180-12-633 | 6-11-89 |
| 17. Rosalia UEnz - Casella & Cin | 586-03-8741 | 6-11-89 |
| 18. Tonnifa Koselling forther | - 586-80-6903 | 6/1/89 |
| 19. Clume & Duevare |) | 6/11/89 |
| 19. June 2 Inevare 20. July 20. | 586-74-3154 | 6/11/89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
| 1. Survey C Coppers | 566667886 | 16/12/89 |
| Edward SERINGO | V86-07-486V | a/12/89 |
| 3. Jergyin & Mario 2 | 586-86-8044 | 6/12/89 |
| 4. Data C. Totario | 173-59-7691 | 6/12/87 |
| 5. Hamil Dahn | 576-02-5314 | 6/12/59 |
| 6. Aglest Boss | 586-70-9580 | 6/12/59 |
| 7. Steal SAREINES | 1516756 | 6/2/89 |
| 8. Stohn Burenas | 586 -14-1184 | 1/2/89 |
| 9. Flow Santer | 586 - 72 -0676 | 6/12/84 |
| 10. Jun morniga | 552-82-1426 | 6/12/89 |
| 11. January plans | 586-68-9288 | 6/12/89 |
| 12. PEDROVILLE | 586-05-2388 | 6/12/89 |
| 13. Trufa D Jumla | 586-80-4229 | 6/12/89 |
| 14. Junt O. Mating MACTINES | 886-1874-008 | 6/4/89 |
| 15. Tedy R. Oles Tolks | 586-76-7119 | 6/2/89 |
| 16. Front Boy - FRANK BACK | 512-76-0192 | 6-12-85 |
| 17. Condy The COREYTOX | 586-70-8741 | 6-12-89 |
| 18. Bull divening | 586-68-3382 | 6-12-89 |
| 18. Junga George Qui de grady 19. Jegge Jungandy | 586-72-5718 | 6-12-89 |
| 20. | S5#586013124 | 6-12-89 |
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AN ACT TO APPROPRIATE THE SUM OF ONE HUNDRED THOUSAND DOLLARS (\$100,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES AT THE PUBLIC WORKS CENTER, NAVY, GUAM, AND TO ESTABLISH

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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. Let Ut F. San Wind | | |
| A. Pires F. So, Mivel | 586-74-1065 | 6/6/59 |
| 3. Chillere C. Tone / Cathe Colon | 586 66 8658 | 6/6/89 |
| 4. Julie Tolbert / The | 586-07-4450 | 6-6-87 |
| 3. Screau Camacho Jehr | 1586-09-3254 | 6-6-89 |
| 5. Mary Jane Palo mo Dogalomo | 586-68-3050 | 6-7-89 |
| T. Pesic S. Fejers Die | 586-01-7912 | 6-7-89 |
| . Victor A. TORRES Vita a Jon | 586-74-3845 | 6-8-89 |
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| 10. Jake P. Talavera JE / Jak Jakan | 1. 10 JOO 195199 | 6-539 |
| 11. Evelyn S. Torres Tollin | 586-10-5391 | 6-8-89 |
| 12. KHYLMING P. BIGS /Bic- | 586-64-154-1 | 4/8/8-1 |
| 13. AMAHA PAYTON Jande 30 | 586-74-0817 | 6-08-89 |
| 14. KEITH APIAG - 1900 | 586-70-5160 | 6-8-89 |
| 15. June Paragelinda Den | 2250-87. 285 | 6-8-84 |
| 16. any Poterson | 259-49-6702 | (0-9-99 |
| 17. Jerriyny Asman Finer | 586-74-1259 | 4-8-59 |
| 10. Rolend & Keren | 586723911 | 6K109 |
| 19. Roman & Barbanich and Charles | SE 4 C SC 5 C | 15 21 |
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AN ACT TO APPROPRIATE THE SUM OF ONE HUNDRED THOUSAND DOLLARS (\$100,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES AT THE PUBLIC WORKS CENTER, NAVY, GUAM, AND TO ESTABLISH

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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. Elite D. Givenga | 586-68-8651 | W-8-8-0 |
| 2. 79 Will BENUY R QUENGA | 986-74-2793 | 6-8-89 |
| 3. Bonns QueNEA | 584-60-7870 | 6-8-81 |
| 2. Premis Duerra PLENTE FOVENGE 4. Circult F. Quenga Jylia B. Guenga | 550-50 4772 | 6-8-99 |
| 5. Cura P. Quenga | 586-50-05-22 | 6-8-89 |
| E. THOME T. CKISTON | J57-72-8387 | 6-10-89. |
| 7. Jon Shi | 586-05-8071 | 6-70-89 |
| 7. Jon Shing 8. PAKing PaFo | 586-05-8071 | ., ./ |
| 9. Arlene SANTOS | 586-64-5519 | 6/12/89 |
| 10. Edvad & Sonta | 588-090313 | 6/12/89 |
| 11. CRISPIN 5R SANTOS | 872/155 | 6/12/89 |
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| 14. See P. Conce secon | 586-62-5305 | 6111/89 |
| 15. Maria R. Concepción | 586 - 78 - 9282 | 6/11/89 |
| 16. TO THE MAKE NAS TOSEPH I. MATHUS | 586-01-037-6 | 6/11/89 |
| 17. Joseph J. Mafrae | 586-72-4543 | 6-11-89 |
| 18. January. Frances | 586.05-6274 | 6-11-89 |
| FRANCISCA H. S. MAHOS 19. FLANCES CU H. SUNTOS 20. | 586-09-0034 | 6-11-89 |
| 20. | 586-70-6937 | 6-11-89 |
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MOT. LATHER COST. AGE. LY. GEROMANIA

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| 1 Will D. Jun Luinero | 555-60-5959 | 6/5/89 |
| 2. Lou R. Disama | S86-05-0107 | 6/5/89 |
| 3. EH114 DELA ROSA Ling delas | 586-01-2996 | 6/5/89 |
| 4. Rose M. Castro Rese de Castro | 584-70-7377 | 4/5/89 |
| 5. Mary B. Ruena | 586-65-2933 | 4/5/89 |
| 6. MARY B. DUENAS / | ,,, | / |
| | 586-05.2908 | 6-5-89 |
| 7. JULE D. PANGEUNAN Jalen VICTOR & Dynam 8. VATANTY D. CASTOO | 586-07-565/ | 06-05-89 |
| 9. anthony Q Con | 586-70-2049 | 06-05-89 |
| 9. anthony O Coman Exminite S Huzman 10. Bancing Suman JOSE M. MANIBUSAN | 545 58 5317 | 6-6-89 |
| 1 Jose M. Montues | 571-54-1208 | 6-6-89 |
| 12 Dentener Jon | 586-03-7345 | 6/1/89 |
| 12' lentener / Den 13. Jeffery Naputi Dolores C. Naputi | 586-74-3346 | 6/7/89 |
| 14. Polores C. Naputi ELENTIA C. MANIBUSAN | 586-76-8988 | 6/7/89 |
| ELENTIA C. MANIBUSAN 15. Elenta C. Manibusan | 586-01-7179 | 6/7/89 |
| 16. Mani J. Llydast | 586-01-7545 | 6-7-89 |
| 17. Matha Stralance | 564-64-2925 | 6-7-89 |
| 18. Bisher Wrone | 584-66-5711 | 6-7-89 |
| 19 Jose R. Dela Crus | 568-56-2703 | 6-7-89 |
| 20. Resita Chiz | 569-351478 | 6-7-89 |
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AN ACT TO APPROPRIATE THE SUM OF ONE HUNDRED THOUSAND DOLLARS (\$100,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) AFFECTED EMPLOYEES AT THE PUBLIC WORKS CENTER, NAVY, GUAM, AND TO ESTABLISH

AN EMPLOYEES' PCB RECOVERY FUND.

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|--|--------------------|---------|
| 1. Candelonia A. Patricia | 586-07-3911 | 6/8/89 |
| Aurora S. Lowe | 386-70-0526 | 6/8/89 |
| 13. (dup man x X x x x x x x x x x x x x x x x x x | 586.01-4072 | 6.18/89 |
| 4. Juanta Contracto Mayrieta Fones | 586-05-9308 | 48/89 |
| 5. Maysie M. fancs Maria C. Bunn | 584-40-9829 | 4/489 |
| 6. Maria C. Dun | 565-27-8602 | 6/9/89 |
| William St. Schlan | 586-05-4024 | 6/8/89 |
| 7. Min & Seller Zery F. MACADAGUM 8. Jacky J. Macadagu | 586-07-9337 | 6/8/84 |
| Joann C. Fartinas | 586-70-6103 | 6/8/89 |
| 10. Terre D. C. Quinata | 586-66-8963 | 6/8/89 |
| Julia o la jeron | 586-62-0095 | 6/8/89 |
| 12. Julia BGARRIDE | 586.09-2519 | 6-8.89 |
| 12. Julia Barrier 12. Julia Barrier He bein 12. Claretin 13. Julia Barrier 14. Comment | 580-05-6405 | 6-8-87 |
| 14. Jack munoz | 586-01-8531 | 6-7-89 |
| 15. Janice Ryan | 789-2517 | 6/8/89 |
| 16 horice towers thing Vans | is 0783993 (armen) | 1/5/59 |
| 17. Leaning De Partino | 584-05-9169 | 6/8/89 |
| 18. Porde J. Alen FEMULISCO D. MUNA | 105-58-6256 | 6/8/89 |
| 19. Minory D. Mine | 576-62-5575 | 6/9/89 |
| 20. Concell Cy: | 586-03-8681 | 6/8/89 |
| | | |

MARKET XI TO SEE THE SECOND SE

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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|--|-----------------|------------|
| : Andre J Paulso Pulipulio | 586-82-7496 | 6-7-8. |
| 2. Pobert Agung ROBERT AGUERO | 586-98-845/ | 6-7-45 |
| 2. Pobert Aguer ROBERT AGUERO 3. Phup for Philip Frores | 586-80-2582 | 060789 |
| 4. Chris Namete chris Ninete | \$86-80-0869 | 6-7-89 |
| 5. FRANK & CORPUZ FRANKLORPE | - 586-18-9125 | 4-7-89 |
| 5. FRANKLIN D. ASWER - Jumple p. Com | | 89 - ۱ - ی |
| 7. Klem Kin | 258-33.2507 | 6-7-49 |
| E. Francisco Education | BE -74-9772 | 6-7-89 |
| 9. John P. Man. 2 John P. Money | 892 - 64 - 7650 | 6/1/87 |
| 10. Janie W. Castro Jance Carry | 566-66-56 | 6/7/89 |
| 11. Jenny F. SiOCO John J. Sio | 561-64-8533 | June 7,489 |
| 12. Sheela R. Dunata | 586-68-57041 | 6/7/89 |
| 13. MICHAGE FO. DIGGAS Michael J. O. Dueñas | 586-72-6980 | 6/7/89 |
| 14 JOSEphine Tayleron for F | 350-54-3420 | 6/7/84 |
| 15. Nonette & Cayama | 594-78-7518 | 0/7/89 |
| 16 AKLENE CCANDASO. Anleno C. Candaso | 586-82-5176 | 61-189 |
| 17. Jeffery Francisco Jeffrey et moro | 586-68-9421 | 06-52-89 |
| 18. Ed Palacios El Pareros | <86-42 2258 | 6-7-89 |
| 19. John fanat of Toluntainatour | eo 584-74-0855 | 47/89 |
| 20. Sennifer Loberto John | 586-70-2524 | 6/7/89 |
| | <u>.</u> | |

AN ACT TO APPROPRIATE THE SUM OF ONE EUNDRED THOUSAND DOLLARS (\$100,000) TO ASSIST POLYCHLORINATED BIPHENYLS (PCB) APPECTED EMPLOYEES AT THE PUBLIC WORKS CENTER, NAVY, GUAM, AND TO ESTABLISH

AN EMPLOYEES' PCB RECOVERY FUND.

| HAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|----------------------------------|--------------------------|-----------|
| 1. WHN ENCION STORY OF | 586-76-6805 | 6-9-89 |
| ANTONIO LIBERGANTO | 581-64-1378 | 6-9-89 |
| 3. EDGAR S. SUMBON CAMP | 58 -72-1957 | 6-9-89 |
| 4. FLORENCIO P. RADA TORON | 586-76-7406 | 6-9-89 |
| 5. Ed Hiponia | 286-66-0208 | 6-9-89 |
| 6. REGNALDO M.c. ARCE/ vun | 586-07-1679 | 6-9-89 |
| 7. SAMUEL IS REALICE Realies | 586 - 78 - 82 <i>5</i> 8 | 6-9-89 |
| 8. PERICLES ROBIEN JR | 584-82-4258 | 4-9-89 |
| 9. EFREN B. SANTOS LA B. Sug | 586-07-9520 | 6-9-89 |
| 10. LISA R. CRUZ Sisa R. Quy | 586-80-3538 | 6-9-89 |
| 11. JUANA S. CRUD Durare S. Cley | 886-64-3375 | 6-12-89 |
| 12. Joaquin B.CRUZ Daguis & Cur | | 6-10-89 |
| 13. Elizabeth M. Salas Sahith al | 575-60-5111 | 6-12-89 . |
| 14. Pathy P. Norruha | 586643379 | 6/18/89 |
| 15. EKLINDA Q. SANTOS GAMES | J84702628 | G12/09 |
| 16 ANNIE M. CARRERA Catrin | 586668599 | (/2/59 |
| 17. Faul RORES Faul flore | 576-60-8610 | 6/12/89 |
| 18 BELLY S. CROW Benny & C | 586-03-5925 | 6/12/89 |
| 19. | | |
| 20. : ; | | |
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NILIE WINDS ARE SV GERRAGE

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|-------------------------|-------------------|-----------|
| 1. VANGIE A. CACHIDA | 586. 72-5238 | |
| 2. TARA M. SARZ-ABA | 586-74-5328 | 6-5-89 |
| 3. MANUELA P. WAYARBO | 586-68-1240 | 65-89 |
| 4. AL B. SIACTONG - | 632-162/586-07-4 | 6-5-89 |
| 5. FDMLINU BATAC | 646-5138,580-64-2 | 106-5-0-3 |
| 6.Komerly (tital) | 586.70.40G | 47 |
| 7. Set R. ESPIRITU | 546-68-9174 | (-5-46 |
| 8. Remy Sargero | 586-07-0582 | 6-6-89 |
| 9. FRED H. GARCIA | 586-70-7781 | 6-6-89 |
| 10. Ff fyralds & Caraka | 584-72-3312 | 6-4-89 |
| 11. | | |
| 12. | | |
| 13. | | |
| 14. | | |
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PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|--|-----------------|-------------|
| 1. CECILIA RAPOLLA PRAPALLA | 586-07-676 | 4/4/89 |
| 2. CARMEN P. Vergara Cor. | 586-05-9647 | June 6,89 |
| 3. Frank Sablay Fresh John | 586-78-0210 | And 6,89 |
| 4. Catalina Sobler Cotatins in | 586-03-6896 | 16/6/25 |
| 5. Anglia C. Jarai | 586-3551 | 6/31.80 |
| 6. June 7 Fina | 381-42-2627 | 6/6/3/4 |
| 4 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | 586-80-2731 | 6/6,54 |
| 8. The Charles (Verice) Production | 2764-64-64° | 6/6,5% |
| 9. / 2 / / / / / / / / / / / / / / / / / | Burgo Well | 44/ |
| 10. ation of himson bounder the | | |
| | | - (/ / · / |
| 11. Excision 19 12. [1. C. | 586 68-0616 | 6/6/47 |
| 13.50 Kel 7. CAMBOAT Han it | 560-01-41/6 | 1.17.159 |
| 14. Routa & Perez Costa D. Por | 542-61-5300 | 12/89 |
| 15. Pinistry G. Rimera | 533-24-8146 | |
| 16. IDENES REPORTES POR STORES | 736-65 1648 | |
| 17.1-1 Pages 19 | h35233 (CC) 2. | |
| 18. June Richard Salar | 551 41 70,11 | (1. \\\. |
| 19. The the modele of the | | |
| 20. MARIA MONTERDE MS. Montes | | 6/12/89 |
| | | , , , , , , |

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|---|-----------------|-----------|
| 1. JOHN F SIQUE SALAS | 586-64-8525 | Le-6-89 |
| 2. Editha B. Imbuido edulaminato 3. Scorr Braor Lest W Grady 4. PRUDENCIOSANIOS 5. SAQVIN B. TOURINTO SULLEUS 5. SAQVIN B. TOURINTO SULLEUS | 586-30-8275 | 6-6-80 |
| 3. Scott BRADY Least W Quality. X | 516-92-9327 | 6-6-89 |
| 4. PRUDENCIOSANTOS | | 6-6-89 |
| 5. SAQVIN B. TO CENTINO Selles | 568-47-1927 | 6-6-89 |
| 6. KELEP DEITAS (CA) | 219-19-3748 | 6-6-89 |
| 7. Cosos C Quitoque Calo Quitos | 586-76-1888 | 5-6-87 |
| 7. Casas C. Quitogua Cal Q'I. 8. Radames C. Aluano | 586-82-0114 | 6-6-89 |
| 9. Janvines S. Enriquez | 586-64-3221 | 6.6-89 |
| 10. MA NEC C. MENDRA Mais Jud | 586 -82176P | 6-6-89 |
| 11. Report Later Rychold | 186 - 78 - 9517 | 6-6 -87 |
| 12. VILLANO D. TBAY H. H. | 586-68-8578 | 6-6-89 |
| 13. Castalo Barga charte | 586-64-0423 | 6/6/89 |
| 14. GOSPAR D. Ibay A.J.A | | |
| 15. MANNIN J. Tovos Shoris Tor | 21 446 | 6/6/89 |
| 16. Edward & Swiss Church Santo | 586-60-8680 | 6-7/89 |
| 16. Edward & Swiss liver Sunto 17. Faderick C. Covered | 186-72-6921 | 6-7-89 |
| 18. David PENETRUEZ - Banto Ran | | 16-7-89 |
| 19. ROGER O. PALADROGER Pake | \$ 586-62-1013 | 06/7/89 |
| 20. APOLONIO A-BULLYNO | 586-80-3476 | 06/07/89 |
| | | 7 - 7 - 7 |

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PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

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|--------------------------------|----------------------------|---------|
| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE/ |
| 1. V. Moos frum | | DATE / |
| 2. R. BRown San | 58e 07.6190 343-86,5413 | 6/5/4 |
| 3. R. Mouo By A. M. | 540-90-9695 | 4/5/49 |
| 4. SPORER Beng | 886 68 1201 | 4/5/87 |
| 5.D. BOJAS BROYERS | 586-64-1829 | 6/5/89 |
| 6 ANNIE SANTOS PARELES | 586-05-0978 | 6/5/89 |
| 7. GIERGE MSALAS CELLES | 586.70,5072 | 6/5/59 |
| 8. Antonio Salas Daes | 586-72-3776 | 10/5/89 |
| 9. ANNES FALOWIN Abald | | 6/5/87 |
| 10. MERCED M. SALAS | 586-62-3307 | 6/5/87 |
| 11. Sheila of & Hernandez | 586-68-5013 | 4-5-89 |
| 12. Can 2 2 Day December | | 6-6-50 |
| 13 Janu J. Jargehnar | 586-64-006-1 | 6/6/89 |
| 14. Julio Flanter | 586-03-4105 | 6/6/89 |
| 15. LISA J. Santas Santas | 586-70-5965 | 6/6/89 |
| 16 HERMENHILDA PAURILLO Spanie | | 6/6/89 |
| 17. 1056 C. FLORES pully | | 6/6/19 |
| 18. liesta & Rayes | 586-63-4971 586-64-8433 | 4/6/83 |
| 19. Linny There | 581-09-0103 | 61/189 |
| 20. Eurod E. Ci | 516-05-9579 | 6/7/89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|---|-----------------|---------|
| BERUMD BELLEVENTE / BRut | 576-64-4256 | 6-5-19 |
| 2. HONICA L. FERNANDEZ Infernandez | 586-70-1271 | 6/5/89 |
| 3. Marcy construct de | J86-07-5926 | 6/1/89 |
| FEALES EUSTAGUIO / 78 Eus Augu | 586-64-9708 | 6/5/89 |
| 5 JULIA B. CAMACHO Pului B. Camillo | 58-66-4279 | 6/5/84 |
| E.BILL TOUMS Mones | 586-66-7573 | 6-5-89 |
| 7. HENRY M. Sontos Har | 586-07-6692 | 6/5/89 |
| E. Doris F. youasta pagt | 886-62-4373 | 6/5/89 |
| 9 July of Mely | 786-076×50 | 6/5/89 |
| 12. THELMA G-SOLOMON Justomer | 586-09.3054 | 6-5-85 |
| 11. Wurm R. QuicHocoo Hay & fluster | 1 3 | 6-5-89 |
| 12. ACCEMARIE C. PEREZ / PORZ | 586-14 3296 | 6/5/89 |
| 13 JESSE FERNANDEZ SPACK for | \$586-70-4460 | Ce/2/89 |
| 13. JESSE FERNANDEZ June for 14. Valerie Palacin | 586-05-9171 | 6/5/89 |
| 15 ROBYN R. MASNAYON Plommo | 586-70-5389 | 6-5-89 |
| 16. GAROTICE MANIA | 186624218 | 6-JP9 |
| 17. Rita Catakay Allan | 186 Och 2000 | 76.5-37 |
| 18. Eugen/o Susure & | 586-05-8749 | 4/5/89 |
| 19. KD Fure | 12ef-36-6503 | 4/5/69 |
| 20 Rose Salar : | 586-05-8247 | 4/5/89 |
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| SS OR ID NUMBER | DATE |
| 586-07-5121 | 6/5/89 |
| 549- 64- RIGO | 4/5/87 |
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| 567 50-6074 | 6/5/89 |
| 376 60 2849 | Ø5/89 |
| 586051821 | 6/5/8 |
| 389-36-6956 | |
| | 6/5/89 |
| , , | 6/1/89, |
| | 6/4/84 |
| | 4/5/19 |
| | 64189 |
| | -6/6/89 |
| SP6-01-1457 | 6/6/89 |
| 586-09-4213 | 6/12/79 |
| | 6/5/84 |
| | 6/5/89 |
| July 57 77 76 | 70/0/ |
| - 101 d | . 1. 100 |
| | 65-09 |
| 586-72-3970 | 6.5-09 |
| 586-05-7249 | 6/5/89 |
| | |
| | 569-04-8160 567-50-6074 376-60 2849 586-05-18-21 389-36-6956 586-05-9109 :586-07-7321 586-07-7321 586-07-1193 586-03-4812 586-03-9665 SPG-01-1455 586-09-4213 586-64-8382 586-64-4496 |

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PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

| | CC OD TO NUMBER | DAMP |
|---|-----------------|----------|
| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
| 1. John C Tours phice | 586-62-45-80 | 4-5-89 |
| 2. AMAFINORA Pfraginona | \$ 17-554 | 6-5-89 |
| 3. Oprilia S. SAN AGUSTIA Grahit Llyn | 2 586-01-1359 | 6-5-89 |
| 4. Lourdes D Ligar LO Digas | 386-62-1614 | 6-5-89 |
| 5. AGNES R. HERNANDEZ | 586-68-3354 | 6-5-89 |
| 6. VEROULA B. SAUNKOUS /BEN | 586-05-9509 | 6-5-89 |
| 7. MARIANA FERNANDEZ | 586-01-9192 | 6-5-89 |
| 8. Krasis P. Camacks | 186-01-3281 | 06/05/89 |
| 4. LOURS D LUJAN SONGEL 5. PARONICA B. SALINKOUS PORT 7. MARIANA FERNANDEZ ROSSINO P. COMBERNO 8. RILLING B. MESA 9. POTRICIA O. HERNANDEZ | 586-05-8043 | 4/5/89 |
| 10. Patricia O. HERNANDEZ | 586.03 @ 156 | 65 89 |
| 11. EVANGELING L. BILLOTE - EUBI MOTE | 329-50-4196 | 6-5-89 |
| 12. CECILA MAFNAS - Comafron | 586-07-7528 | 6-5-89 |
| 13. ANA Q. TAITANU Gartans | 568-46-8712 | 6-5-89 |
| 14. TACQUELINE B. SANTOS ABOUTES | 586-66-3764 | 6/5/89 |
| 15. Barbara M. Paulino Bryant | 586-07-2710 | 6/5/89 |
| 16. Veronich susuice Transico | 586-03-48te3 | 6/5/09 |
| 17. Jan Micolas Michlas | 586-07-8736 | 6/5/89 |
| 18. Joseph James | DL# 1013325 | 6/5/89 |
| 19. Loretta BLERUZ Lauta B.L. Crun | | 6/5/89 |
| 20. Julie J. SABIAN All | 586-03-5007 | 6/5/89 |
| | | |

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|---|-----------------|---------------|
| 1. Tuan Acciale 50/16, June Wholey | 586-01-4519. | 6/7/89 |
| 2. IsAbel L.G. SALAS, Deald of & | | 6/7/89 |
| 3. Jac file Oablan Solas Julie O Olls | 586-72-9826 | 6-7-89 |
| 4. TL 6 Salos Tomon G. SNUR | 586-09-0281 | 7JUN 89 |
| 5. Juve Star, Jesse Suls | 506-76-269 | JUNE TEA |
| E. COSTON M. VALIMETER, JOT N. V. | 1 | 67/89 |
| 7. George 16 Saus West | 586-70-4694 | 4/7/89 |
| E. Ramon O Metra Della | 586-72-9331 | 6-8-69 |
| s. Agla J. Cruz | | 6/8/89 |
| 9. Acta J. Cruz 10. Recomps Rethie Solomon | 586-88-7184 | 6/8/89 |
| 11. EM DILINITHINIA OTE TO | 550-33-7795 | a/10/89 |
| 12. Bricio Quintonilla PADAM | 550-33-6815 | June 10, 1989 |
| 13. Allowardes C. Desmarais | 586-05-1260 | 616189 |
| 17. PETCHUEN TORIES ON DWOW | 586-66-4888 | 6/12/89 |
| 15. Franco P. France | 586-01-9051 | 06/12/59 |
| 16. I tour B. Carto | 586-01-9723 | 06/1489 |
| 16. Hour B. Carto | 586-01-9306 | d/12/39 |
| 18. Jeous B. Yaminika | 586-01-1849 | 06/11/89 |
| 19. Au Mario | 586-05-0716 | 06/12/89 |
| 20 dat Lollans | | 06/12/89 |
| | | |

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|---|-----------------|---------|
| 1. EURABUTH SAGA Mighthe V. Saga | 575-04.6473 | 6/6/89 |
| 2 DOROTH & TOPASNA Dopasna | 576-03-1357 | 6/6/89 |
| 3. ISABOLITH S. PINEDA Official | 586-64.7580 | 4/6/89 |
| 5. Jennifer Lachance Ja 6. Agnes A. Cruz- Copy | 15x -74- 4xxy | u/4-189 |
| 5. Jennifer Luchance Ja | 586-68-5206 | 6-6-89 |
| 6. Agnes A. Cruz- Celary | 536-05-4900 | 6/3/89 |
| 7. Kutherman R. Carlos Friends | | 4.5% |
| 8. Lourdes T. Manibusan Jou de Muis | K 586-03-1431 | 6/6/89 |
| Statura E Cin Lation To | 586 722293 | 6/6/89 |
| 10. HUBERT S. VEEUS TO | 586721281 | 66 89 |
| 10. HUBERT S. VEEUS TO KATHLEEN T. NEDEDOG KN Edward | 586 66 7938 | 6/7/89 |
| 12. ROS SANTOS Plantos | 1 | 6/7/89 |
| 12. ROS SANTOS Plantos 13 illian Gurroto Guerren | 586-68-5469 | 6/3/55 |
| | 586-07-9241 | 4/7/89 |
| 15. VINCENT J. SMM John | 586 62.972Y | 6/07/89 |
| 16. HMG C. GOLLO MINESTO | 58-48-1205 | 6789 |
| 17. Jesse Q. Manyla Jose O Wais | £ 586683421 | 6-7-89 |
| 18. Julie Ci plan | 586-64-2485 | 6/7/89. |
| 19. Friette Willemeno | 454.65.5043 | 6-7-89 |
| 20. Juan M. Den | 586 68-6829 | 6-8-89 |
| | . ` . | |

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|--|-----------------|----------|
| | 586-05-6743 | 6-7-89 |
| 2. Avo E. a. Cruz Scruz | 586 64-7692 | 11 |
| 3. THEFT T. THERES - Tinua - Dawn | 536-65-2524 | |
| 4. Menny A Tomer Hang H Hans | | , |
| 5. terisand Hours on Managemone | | / /2 . 1 |
| 6. Barbara F. Lanada Munde | 586-07-5320 | 6-8-89 |
| 7. Rodol & R. Lanada Rollifo Charad | i e | 6-8-89 |
| 8. Linda B. Dabut | 576 05 0428 | 6/8/89 |
| 9. Policia (Destall | 586-09-1263 | 6/8/89 |
| 10. Patricia /5. Fejis | 586-07-0447 | 6/5/89 |
| 11. Venise Q. Arceo/ Jenin Q Ances | 586-66-9001 | 11 |
| 12. FRANCIS J. FRANCISCO/Trans J. Trans | | I i |
| 13. Flores, Olike C. Olital, Low | 586-03-2041 | • 1/ |
| 14. PAUL J. TERRAJE POLATER | | 6/08/89 |
| 15. Helandro E. Basa- Assa | | 6/08/89 |
| 16 Rosa lind B. Sin Nicokes Rander B. S. | | 6/8/89 |
| 17. John C Gobre John C. Jogn | 586-12-4349 | 6-8-89 |
| 18. Milent M. CRUZ Van W. Clay | | 11 |
| 19. RAYWOND V. BLAK Rayword V. BRD | S86-05-8929 | н |
| 20. MAIZIA B. CROZ WZZPAWY | | 6-8-89 |
| | | |

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|---|-----------------|--------------|
| 1. CRISPIN B. BENSAN CURPLEM | | JUNE 4,1989 |
| / 1// // | i i | JUNE 4 1989 |
| 2. DANIEL B. BENSAN Main Julius 3. WICTORINO S PAPANTA | 186-05-5843 | JUNE 5, 1989 |
| 4. Quillet, Olim | 586-66-0620 | June 5/89 |
| 5. SONNY A. CASALLO | 079-46-4929 | Junes,/89 |
| | 586-76-7181 | Jun 7/89 |
| 6. MARLON LEANO ALFARO J. BLAS 7. TISL 3 BLAS | 586 - 07-7043 | Juna 5/89 |
| 8. JOHU M. GARCIE MO | 586-07-6146 | Jane 3/89 |
| 9. YXLENTE S.ALMANZOR | 586-07-1163 | JUNE 5/59 |
| 10. Dessita V. Curt. | 182-12-1348 | June 1/39 |
| 11. CONSTINTINO D. SCINCIO Martin V.C. Mendivig | 586-62-1085 | 6/5/89 |
| 12. hatting newsong | 586-05-2685 | 6/5/89 |
| ALVARO B. PECSON 13 Howkern | 58G-72-5G48 | 6/5/89 |
| 13 Monte Company 14. A Secure HONATO C. HELLENS 15. MONE CHALLENS 15. MONE CHALLENS | 586-64-3292 | 6/5/89 |
| 15. MATO CHALLENS | 586-03-206V | 6/5/89 |
| 16. BOYEN SONDEA QUINTANICLA | 586-01-0W | 6/5/85 |
| 17. Sandre Vuntarilla | 576-96-5932 | 6/5/89 |
| 18. HOSTAN | 586.69-9296 | 6/5/89 |
| 18. PARTE BASAUTA 19. Inc. Basauta 19. Inc. Basauta | 586050685 | 6/5/89 |
| 20. Its Kingers | 56.62.3500 | 6/1/89 |
| | 7.7 | / / |

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| : CARLOS A RALVO Carlos OColo | 586-07-53/4 | 6/5/89 |
| 2. VINCENT M. ROSARID | 586 05 779/ | 6/6/29 |
| 3. MICENTE M. ACPALLE MONTE MASSILE | 586-05-5179 | 6/6/89 |
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THE PARTY OF THE P

PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

| NAME: PRINT & SIGN | SS OR ID NUMBER | Damp |
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| | | DATE |
| 1. 3 mi Syn Castanele | 581-82-3233 | 4/4/3 |
| 2. Many Q. Day | 586-70-6246 | 6-8-89 |
| 3. Edward Comes | 586-05-3959 | 6-8-89 |
| Donna Balajadia | 586-174-067 | 1 ' 1 |
| 5. Donna Balajadia | 586-80-5964 | 6-8-89 |
| 5. Donna Bolajadia. 6. June M. Vela | 586-09-2968 | le-8-89 |
| 7. Aprile Chrise Continual | 1584-Q-200 u | 4-26-89 |
| ROSARIO B. BALAJA DIA E. Popario B. Balajadia | 586-66-8389 | 4-5-59 |
| 9. fisk & square | <i>586-68-4341</i> | 6-8-89 |
| 9. fish of Aguani Instruction of Pregodia | 9110-40 595 A | 10-8-39 |
| 11. Jania R. Tutingsong | 586-922033 | 6-8-88 |
| 12! Florie J. Balajade | 586.03.7774 | 6-11-59 |
| 13. Times B. Balojadia | 586 CS 127 C | 6-1-89 |
| 14. Jose B Bulgadia | 586-64-4970 | 6-11-89 |
| 15. Edward B. Garrido PHOLA MARIE BALASADIA | 58668-3374 | 6-12-89 |
| 16 Balayadan Pole BALASADIA | 586-80-5966 | 6-8-89 |
| 17. | | |
| 18. Uni Escalona Algrent | 134-42-543 | 4/4/89. |
| Dorothy B. B. Lajadios 1. | 586-1010-6571 | 6/8/89 |
| 20. | | 777 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. Sous B. CHACO | 586-03-5987 | 6-5-89 |
| JEFFEL 13. CHACO | 586-78-0837 | 6-5-89 |
| 13.1/Walnua D. Chaco | 586-03-4776 | 6-5-89 |
| 4. dan C. Quevas Amaria C. Brub | 586 03 9254 | 6-5-89 |
| 5. maria C. Bruh | 586-07-9505 | 6-5-59 |
| 6. Greg L. Brub | 586-68-6034 | 6-5-89 |
| 7. VIVIANI C. BRUB 7. VINIA C. BRUB TOWN W. BRUB | 586-05-27-67 | 6-1-89 |
| 3. Try W. B.A. JOMATIENE BRUB | 506-68-6096 | 6-5-89 |
| 9. JOBULE BRUB | 586-68-5930 | W-4-89 |
| 9. Jo Bruk 10. G. HARTH M. GALTER MUNCS Annie P. Robento | 370-Jo-5V34 | (e-6. 87 |
| 11. Innie F. Roberto | 269-34-3082 | 6-8-89 |
| • - | 534-42-5911 | 6-7-89 |
| 12. Barbara M. Costa 13. Proper A. Land Guerrano | 055-32-8325 | 6-2-89 |
| 14. Off A. LOWA GUERACOTO | 586-05-8106- | 6-7-89 |
| 15. July 1/ 1/ 3200 8. A. 7500? | | |
| 16. jetarah A Pereira | 586-66 9712 | 6-7-64 |
| 17. Edgent Plinial | 586 11-1866 | 6 2.57 |
| 18. James Jack ha | 586-74-4260 | 6-7-89. |
| 19. La Paryeline | Tamering | 6-7-89 |
| 20. Cocher C. Us | 586-02-6730 | 6-7-89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. ROSAYNE P. BAMBA Rosahin P. Edula | • | 6/5/89 |
| 2. ALBERTC. MOLICA albort C. Mission | | 6/5/89 |
| 3. BRIGIDA Comosica Brigila Mos | | 15-189 |
| 4 CARMEN A. NAUTA Camen Alba | D 586-68-6691 | 6/5/89 |
| 5. Lourdes S. Panahe | 586-62-4626 | 10/5/89 |
| 6. AlFRED PANABE alfred Panule | Į. | 6/5/89 |
| 7. Mac Panaba Mac Panabe | 586-60-8245 | 6/5/89 |
| 8. Cathy Panale Cathy Panale | 586-60-6959 | 6/5/89 |
| 9. Carney C. CHACO Compan 6 Checo | | 6/5/89 |
| 10. CHRISTIN M. CHACO Cahriela M. Chac | - 586-76-3772 | 6/5/89 |
| 11 JESE J. CHACO Jesse J. Chaco | 584-68-2146 | 6/5/89 |
| 12 Jesse T. Nededocy | 586-62-1755 | 6/5/89 |
| 13. MILLIAM R. Chaco Willer Cha | co 586-07-9309 | 615189 |
| 14. WIWIAM & CHACO SE William | . | 65-89 |
| 15 THATIA M CHARD Mailal | M (Maci) 55/10-712-1110 | 0-5-85 |
| 16. Harie & Toves | Horrie E. 1548-1 | 6-5-89 |
| 17 NIAPING SAUTOS | M 286-36 140 by | 1. 6/5/89 |
| 18. MATONIOS-SANTOS | (m+ 5,50= 48 92) | 5 613/89 |
| 18. MATONIOS-SANTOS 19. FRED C SANTOS | 71102545891324 | 6/5/89 |
| 20 BENNY C SANTOS | Bango Sat 516 164 41 | 164 6/5/89 |
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THE PARTY OF THE P

PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
| 1. Fely A. Culiat | 556-25.9631 | 6/6/89 |
| 2. Edma E. Langub | 586-07-7562 | 6/6/82 |
| 3. Sevente L. Lachos | 586-67-5312 | 0/6/82 |
| 4. Cafini h Sinuels | 586 0702 73 | 6/1/89 |
| 5. Pag 10 Pagan 1- | 5x6-03-3906 | 6-6-61 |
| 6. Ma amelia of folidum | 586-68-3410 | 6-6-89 |
| 7. Raidis L. Sonto | 586-07-5196 | 6-6-89 |
| 8. Teresita A. Salas | 586-03-5138 | 4-6-89 |
| 9. Dolores G. Saplan | 41247 | 6/6/89 |
| 10. Fratise C. Duke fora C. Consur. | J51969141 | 4/6/89 |
| Rosa C. Conolini 11. ROSA C. CANARIOS | 547-48-6332 | 6/6/69 |
| 11. ROSA C. CANARIOS LICIANIS GIAN 12. Chalen S Ruen | 586 - 07 - 8342 | 6/6/89 |
| Carrelita B. Delos Reyes 13. Carrelta B. Delos Reyes CERSPA JERES | 586-09-4350 | 6/6/89 |
| 14. Les DALACIOS ANTHONY 5. PALACIOS | 1 | G/7/89 |
| 15 PALACIOS | 586-74-3970 586-72-0396 | 6/7/89 |
| 16. Vincent mageda | 555-37-4655 | 617189 |
| | 584-70 5966 | 67) Xg |
| 18. July a beet | 586-76-17 | 1/7/02 |
| 4 | F.F. | 6/20 |
| 19. 20. Rull | 584-66 245D | 6/7/89 |
| | | |

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|-----------------------------------|------------------|---------|
| 1. JOSE M MANIBUSAN JOURN WAIL | 586-01-6164 | 6-9-89 |
| 2. AMA/IHG. ARCEO. anglic & aries | · | 6-9-89 |
| 3 CARMEN-ASANNIKALE Come assi | idon 586.01-9536 | 6-9-89 |
| 4 JOANA C. GARRIDO Juna Barris | 5.86.01-1349 | 6-9-89 |
| 5. Sn. Zosa Barrey of | Hez-11-09/6 | 6-9-39 |
| 1 / // | | 6-9-89 |
| 7. Smild & Mn L | 586-07-2456 | 6-9-89 |
| 8. Diniel Morta | 586-86-2844 | 6-9-89 |
| 9. Maria b. Dines | 586-01-1672 | 6-9-89 |
| 10 Prisable W. Musa | 586.07.6532 | 6-9-89 |
| 11. Henry G. Mesa | 986-07-3370 | 6-9-89 |
| 11. Henry G. Mesa 12. | 161-42-589V | 6-9-89 |
| 13. Amoinette G. Idolor | 586.05-9340 | 6-9-8-9 |
| 14. E. GUEVARA Blee To | 586030585 | 0 |
| 15. L. GUEVARAL. Buenar | 586016025 | 11 |
| 16. A. U. Luevara | 549-70-5284 | 6-9-89 |
| 17. LOUISE SAN NICOLAS | 586038377 | 6/9/89 |
| 18. Pouse San Maolos | | |
| 19. Ofin 4- Softagles | 586-03-9874 | 6/11/89 |
| 20 Frank June | 646-9241 | 6/11/89 |
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THE PARTY OF THE P

PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
| Louist Quinfanti | 546-07-5968 | 10/4/89 |
| CARMEN P KANESTI 2. Ciamen P. Kaneshi AMISTAS. DANA | 586-03-5101 | 6/5/89 |
| AMistas. Della 3. Amisia b. Pella Jos-Phile B. SANTOS | 586-03-4263 | 6/5/89 |
| | 516-03-8147 | 665189 |
| 4. Janhie B. Sonto HELEW P. ALLAREZ 5. Dr. Vilmun | 556-05-5557 | 6/5/89 |
| 5. DIVISMEN GINA FT. MANIBUSAN 6. Dia EJ Marib | 72 64 102 | 6/5/89 |
| 7. Ronald M. Lear Guerrer | 584-4-2210 | 45/59 |
| 8. Nosa Leon Guerrero Sulas 8. Nosa Leon Allenenadola | 551-80-0376 | 6/5/89 |
| 8. Nosa Leon Guerreno Sala NADSA C PUNAMI 9. Nodja C Putuom | 586-88-0723 | 6/5/39 |
| Frunces & Rabinson . | 586-05-6718 | 5/5/89 |
| 10 - Franco d. Polinson 11. D. D. Blue | 586-66-4135 | 6/5/19 |
| 11. Pose Frimange 12. Jose Tarmange | 586-30-9386 | |
| 12. Jan Jamons 2 13. Lipin film Chin | 586-07-1621 | 6/5/89 |
| 13. Lytin Kiristo Chin 14. Lytin Dunas | 584 64-0290 | 6-6-37 |
| 14. Richard Tait Agus 15. Finguilla A Stat | 586-68-0560 | 6-6-89 |
| 16. Truella A Suda Pauline V. Concepción | 586-03-8304 | 6-6.89 |
| 17. Pandin V. Concepción DENNIS A. CALVO | 586-01-5163 | 6/6/89 |
| 18. Milania A. Calles | 584-66-1031; | 6-6-89 |
| 19. Leuta C. Borja | 546-03-3618 | 6-6-59 |
| 20 | | |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|---|-----------------|---------|
| 1. BERNHAD R. SANCHE | 586-03-7039 | 6/3/89 |
| 2. Paul S. Lustiano | 586-70-7933 | 6/3/39 |
| 3. Leslie ES. Lustiana | 586-70-9120 | 6/3/84 |
| 4. Lablo R Sustiano | 586-66-3218 | 6/3/59 |
| 5. Prely S. Justians | 586-07-0040 | 6/3/89 |
| 6. Ding Wahilig | 586-05-4362 | 6/4/89 |
| 7. Cripin Im male. | 596-82-5611 | 6/2/84 |
| 8. Latella Sayu | 586-643250 | 6/4/89 |
| 9. 614 | 199-13-5883 | / / / |
| 10. Idens 3 Canos | T86-66-2912 | 6/4/59 |
| 11. Fether L. Caring | 186-62-01.19 | |
| 12. Rosalina R Ballo | 586 - 68 - 1281 | 6/4/39 |
| 13. Wud o Pili | | 6/4/69 |
| 14. Fortrucky a: Eartillien | · | 11471 |
| 15. Fulla B Elonina ESTER A VALLOZINA | 586 - 80 - 1153 | 6/4/89 |
| 16. ELAMY | 586-104-2365 | 6/4/09 |
| 16. Et ALLY 17. May Ferri Just 1800 17. May Ferri Just 1800 | 453-88-1723 | 6/4/- |
| 18 January Marian Porta 19. Compina majiana Porta | 586-01-4915 | 6-4/79 |
| 19. Gosefina dagliana Porta | 586-66-9525 | 6 4 189 |
| 20. Maria daguara Bora Maria Laguara Bora | 586-01-1573 | 6/4/59 |
| Maria Lagrana Boria | · | |

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. Tesse 5. Agrica desire of liquon | 561-49 -9031 | 6/12/39 |
| 2. Marian fa Q. Liga Daugute Odin | 545-92-2115 | 6/12/89 |
| 2. Marigu fa Q. Liga Draugute Queign 3. Melissa A James Melissa Afane | U 586 76-4214 | 6/12/59 |
| 4. classon V lives does V from | 580-72-8487 | 10/89 |
| 5. Ramona J. James Kamonaf Junes | 586-76-4203 | 10/89 11/12/89 |
| 5. Ramona J. James Ramonaf. Junes 6. Carmen T. CRUZ CICY | 586-62-2403 | 6/12/89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. AGUDH, JOAQUIN H. Jhon | | 6/9/89 |
| 2. Villanueva Anita A. Tinta Villanu | | 6/9/89 |
| 3. Villagonez Licas dear Vingo | MZ , Fre. 586.82-1209 | 6/9/89 |
| 4. Villanueva Gracians Hraciano U | Clareson 586-72-2815 | 6/9/89 |
| 5. Stringer Villagonez Lennifer Villagoni | 5-76-82-2431 | 6/9/89 |
| 6 YENING H. FLEWON yening & agua | | 11 |
| 7. Villa dohne > Ma+ + her | | () |
| 8. Vincent Villanueva | | f) |
| 9 ROSE Z. VIllagemez Attitag | 186-05-3626 | () |
| 10. TONY A Villanorum T. Willamurket | | () |
| 11. ROY AD. Aguan, Roy D. agua | | |
| 12. Annadoy Wolford | | () |
| 13. AGUON JOHN H. John (Jour | m 586-05-1475 | 6/9/89 |
| 14. RABON June P. June Rah | | 6/9/89 |
| 15.13ERVEDITA L. Aquer Commilet | * | |
| 16: T 4/ 1/ feet of | V. Graye 584 53 555 | 1 / 1/1 |
| 17. Acres Prosent T | Below Trans | Paragrams Syr |
| 18. M. C. FAR. A NEW CARE | 55676-2679 | 6/1.7.3 |
| 19. hart 11 run tes (2 | 586-10 3786 | 6/6 |
| 20. MARIOUTA SPALACIOS | 586-017-2580 | 6-11-89 |
| Manyote S. Palcein | | |

PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

| WIND DDING COOK | | |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
| 1. JOSE A. E. MANIBUSAN Jr. | 586-64-7498 | 6/1/89 |
| 2. Soft E. Hanibusan | 575-42-2853 | 6/1/89 |
| 3. ELSIE C. MANIBUSAN Aplum J. Chemat | 586-03-1519 | 6/1/89 |
| 4. YULMUN J. CHENNAUX DALENE C. MANIBUSAN | 586-70-6508 | 6/7/89 |
| 5. Desleve C. MANIBUSAN DEBORAH M. CHANEY | 586-68 8028 | 6/7/89 |
| 6. Laughal Millary Robert Manibusan | 586-68-5944 | 6/7/84 |
| 7. Robert Manibusan PANNY BERSAMIN | 586-64-8048 | 6/7/89 |
| 8. Wany Bersamin And New J Bersamin | 586-82-4338 | 6/7/89 |
| 9. Condiew J Blessenn | 586-74-4245 | 6-7-89 |
| HERMINIA J. BERSAMIN 10. Herminia J. Bersomin Rosent BaisaMIN | 586-68-6605 | 6-7-89 |
| 11. foleut personn | 586-70-6090 | 6-7-89 |
| 12. J. Faulino | 586-05-735G | 6-3-89 |
| 13. La sanco Cu | 586 01 5726 | 6-8-89 |
| 14. drue ff of | JD6 03 5769 | 6-8-89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | האתה |
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| Anceli Leon Guerrero | DO OK ID NUMBER | DATE |
| 1. Cheeli Lean Hueners | 586-07-6766 | 6/5/89 |
| Magdalena C. Salas Esteran T. Caux | 561-48-8969 | 6/8/89 |
| 13 MAP & 1000 | 586-09-2677. | 6/8/89 |
| TSABEL DI AGARUTA | 546.60-3575 | 6/8/89 |
| 5. MARYAN MARPINEZ | 584-60-9312 | 6-8-89 |
| 6. Edna L. B. Martinez/Edna Marti | 18 586-019311 | 6-8-89 |
| 7. Mais P. Leon Guerres | 586-615129 | 6/8/29 |
| 8. A cost | 486-03-9482 | 6/8/89 |
| 9. Haria S. Acosta | 586-03-9111 | 15/18/89 |
| 10. PETE DELCADO 10. Patri Dit JUNCAMACO | 586660B59 | June 8 89 |
| 11. July | 576-07-2996 | 5 /8/89 |
| 12. J. M.C. DELGAPO | 586-07-6304 | 5/8/89 |
| 13. Hune | 561-41-3960 | 6/8/89 |
| 14. CHAFITYHORE S. TAI TAGUE / the Lunger . Tallage | 575-54-4752 | 6/5/59 |
| 15. DANNY A. LEON GUERRERO Jum, a Les | | 6/8/89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. PATININ CASTON N. | 586-72-1059 | 6/4/89 |
| 2. WATREN SUTACIO | 586 -05 - 1845 | 6/5/84 |
| 3.51MEUN S.P. CACHERO | 586-68-2805 | 6/5/59 |
| 4. FERRANDEZ FEIGH L. | 586-03-1916 | 6/5/8/9 |
| 5. Rome o A. Acyo | 584-64-9628 | 6-5-89 |
| 6. Kym S. Przadio | 586-60-5771 | 6-5-89 |
| 7. Blas Joseph M | 586-64-5555 | 6-5-89 |
| 8. SASTO ROGELLO | T86-03-9145 | 6-189 |
| 9. LEONIDES H. CORCHERA | 568-96-4425 | 6-5-89 |
| 10. NEXISTY C. CORCUERA | 586-64-1864 | 6-5-89 |
| 11 JUAN & SalaS | 586-03-0706 | 6-5-69 |
| 12. Luis E. ALCANTARA | 586-03-3733 | 6-5-89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. PHUOC V DINH MILES | 576 66 4192 | 6/6/19 |
| 2. KICHARD H. SANTOS Richaller | 586-07-2940 | 6/6/39 |
| 3. GILBERT A. AGUON | 586-66-5390 | 4/4/89 |
| 4. MILLEND P. EMLITISTA | 586-62-4282 | 6/6/89 |
| 5. Julia d. Sala | 986 - 05- 2855 | 4/4/89 |
| 6. Mayour G.D. A. | 56610 2068 | Ole live 89 |
| 7. William GAV | 586-60-9949 | 6/6/87 |
| 8. RICHARD C CRUZ | 578-90-3901 | 6/6/89 |
| 9. Mann Fefer | 586-66-2851 | 6/1/89 |
| 10. Mensain A Pride | 586 -05 7088 | 6/189 |
| 11. ELPLAD C. GASCON | 586 -64-0469 | 6/7/89 |
| 12. CALI, Ce | 586-07-4128 | 6/7/89 |
| 13. Kentrewez | 218 54 1306 | 6/11/89 |
| 14. O.R. SANTOS | T86. Q3. 8597 | 96.97.89 |
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Prop. (2)

PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|---|-----------------|----------------|
| 1. FSMERALDO M. MONTERDE DESERVE | 586-72-7700 | 6-6-89 |
| 2. TEAN Q BORIN HOBERS. | 575 40 2483 | 6-6-89 |
| 3. ALAH S. CRUZ Wan SC. | 586-70-0274 | 6-6-89 |
| 4. ita. replace A shore | 586-74-1484 | 6/7/89 |
| 4. A. | 580-68-4861 | 6/7/89 |
| 6. Jenei Adame Gone Adam | | 6/7/89 |
| 7. Chic Adame Thic Odas | | 6/7/89 |
| 8. Theresh Februaria | | -// |
| 9. ann Flores | 186.68-2911 | Gover 89 |
| 9. an Firms 10. Rosa B. Flor Rosa 13," | -5-89-68-4832 | B-7 -89 |
| 11. Pedro C. Hous Pedro C. Flores | 586-64-9326 | 6-7-89 |
| 12. BIL M. Agains HAg | , | 6-8-89 |
| 13. Stella & FLORES SEGMONZ | 586-68-6259 | 6-8-89 |
| 14. REXNAUDO A. DAYRH ROBRIT | 586 - 90 - 5347 | 6-5-89 |
| 15. VENERANDO MOFTES UT | 386-82-7156 | 6-8-89 |
| 16. Jose F. Maxres | 586-82-5562 | 6-8-89 |
| 17. Zenaida F. Mortes | 586-82-5620 | 6-8-89 |
| 18. Agrinio B. FLORES | 566-68-4625 | 8-8-89 |
| 19. BOZINA MORTES ZF. | 186 82-1768 | 6-8-89 |
| 20. VENERANDO MONTES FR. | 186-82-1783 | 6-8-89 |
| | | |

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|---|-----------------|---------|
| 1. SANDIE DIAZ DULZ | (86-70-9432 | 6.8.89 |
| 2. June LIAZ Jelleaz | 586-64-0175 | 48/89 |
| 3. Dolores a cere Comes Judinita CRUZ | 586-68-2101 | 4/5/89 |
| 4. Juanta Cruz | 586-78-0647 | 4/8/89 |
| 5. DAVID (RUZ Danis) 2 Cm | 584-106-8247 | 10/8/89 |
| 6. Soul of Rayella | 58668-8445 | 6/5/89 |
| 7. JAMES T. McJonald | 586-66-8297 | 6/9/89 |
| 8. KATHLEN MANIPOL | 586-66-8421 | 6/9/89 |
| 9. MORALD NOTONALD LORRATIO 5 ALODOVIG | 586:66-1671 | 6/9/89 |
| 10. Lorrathie 5. Alodovices | 580-64-7919 | 6/9/89 |
| 11. Meres, ta P. Jaison | 586-08-2137 | 6/1/89 |
| 12. Glader H Guntarton | 386-01-1800 | 6/9/89 |
| 13. Victor Delos Rugus | 586-06-5449 | 6-9-89 |
| 14. Chow & Page Com | 5th-04-4/pm | // |
| 15. art Dhin | 586.07-0857 | 6-9-89 |
| Themas P.L. Tarfano 16. Thempe Tarfano | 586-60-7649 | 6/9/89 |
| 17. Fufle Robert | 586-01-5106 | 6/9/89 |
| 17. Infly R June 18. albert A. Napolii | 586-07-2418 | E/8/89 |
| 19. Jesepha Gailegue | 586-10-6775 | 6/9/89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. hat tark and | 554-15- BAT | 6.5.81 |
| 2. FIRAT | 178 - Cs - 577 7g | 6/1-/14 |
| 3. Sannela | 546-66-8322 | 6/5/89 |
| 2. Josalie M. Mendiola 4. Rosalie M. Mendiola | 586-68-6260 | 6-05-89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1.VICENTED. JUINISILLO (Suntable) | 586-10-6388 | 6/5-/89 |
| 2. Blas, Kinney T. Kath | 586-74-4630 | 6/5/89 |
| 3. IR. SHUTIAD - Junaly Satisfor | 586-70-5951 | 06-02-89 |
| 4. Tim M Graces Janata EMEleany | 586-05-4182 | 06-05-89 |
| 5. Popo Sult | 576-68-2167 | 6/5/89 |
| 6. TEDRO A. DIMANDRES RICK VERGARA | 555-603828 | 6/5/89 |
| 17. W/// | 586-03-6337 | 1/5/89 |
| 8. Franklu Flyik | 586-86-6426 | c/5/89 |
| 9. Anthony I time | 586-70-3638 | 6/5/89 |
| 10. Say J. Dollast | 586-07-1326 | 6/5/89 |
| 11. RAYMOND CAHILL Raymond Ca | hill 575-84-9199 | 415/89 |
| 12. Aprilene Phanchusan | 586-72-5182 | 6/9/89 |
| 13. CINOS HEA Drus | 586-70-3348 | 6/9/89 |
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PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. Jourte 6 Magner | J26-14-1221 | 06-07-99 |
| 2. SAUD B. PEHIPOL | 586-808263 | 6/7/89 |
| 3. Somo Prince | 586 - 70-11VV | 6/7/89 |
| 3. Skud Priliper Goris De Leon 4. Loris Delein | 257-21-3319 | 6/7/89 |
| 5. ANTHONY MILLANGERS | 586-80-4627 | 6/7/89 |
| 6. CARTAGA | 586-80-4343 | 6-07-89 |
| 7. filon en Baarele | 176.80-7801 | 6-07-54 |
| 8. SALVADOR WE LEYVO JE | 586-84-4632 | G-07-84 |
| 9. MORSON STOWNS | 586-84-9292 | 6-07-39 |
| 10. Maximo V. Ronbullo | 586 - 76 - 1727 | 6-07-89 |
| 11. Marine C. Chec AMIHOCAKI | 586 Fo-5 299 | 6-07-89 |
| 12. Porco FABIONON 13. Fely 1. C. | TR-79-3853 | C-7-89 |
| 13. July 1. 1. | 576-63-2412 | le-7-89 |
| 14. CyCrais | 536-12-0552 | 6-7-59 |
| 15. RIGHAST NOTE CARAFEO | 186-76-2755 | 6-7-83 |
| 16. ESTER DAVID | TX1-72-6683 | 6-7-89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. Kim Thai Curning any Kim What | 584-40-8768 | 06/05/89 |
| 2. NOE PEGORIDO A Paganto | | 04/5/89 |
| 3. Los Peterson | | 6/5/89 |
| 4. Windrak Ada Crestan | 115-15-1733 | 15/59 |
| 5 | | 1 - / - 1 |
| 6. Rosoly Pan | gunno! | 04/05/39 |
| 7. Lorand castro | | 45/89 |
| E. ANGELA FLORES angula Horis | 586-78-5537 | 16/8/89 |
| o Dana Hores Dianattores | 586-78-5552 | 6/8/39 |
| 10. Janaero & Jerres | 586-03.0501 | 6-9-89 |
| 11. John Jones JOHN Torres | 586-66-4347 | 6-9-89 |
| 11. John Jones JOHN Torres 12. Folicila C. Jones | res 586-76-8163 | 6-9-89 |
| 13 FORDER HATRIS THURS | 567-54-8075 | 6-5-83 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. AVELINA PATUBO Cheline P. Pateta | 586-66- 6370 | 6/3/89 |
| 2. ALBINO PATUBO A Plon | 586- 62-6347 | 6/3/89 |
| 3. CHARITO PATUBO CALATUBO | 586-80-6991 | 4/3/89 |
| 4. Uyan P. PATUBO Poto | 586-01-8591 | 6/3/49 |
| 5. WALTER B MCASKELL | 586-62-1638 | 6-7-89 |
| 6. FRAIVCISED 1 Ligodine | 58601-8597 | 6-8-89 |
| 7. V. NICOLAS | 586-78-6117 | 6-8-89 |
| 8. VICENTE C. SINNE Picente C. Haup | | 6-8-89 |
| 9. ROBERT MOYA Kunan | 186-07-9004 | 6/08/89 |
| 10. 18/10/cje Angeles | · · · · · · · · · · · · · · · · · · · | 6/0/00 |
| 11. BERNARY . T. ONTEGA & BYOL | | 6/08/85 |
| 12 Rosco e Madregelijo det | 586-727112 | 6/08/89 |
| 13. ALEX CASTROCTUS | 511-12-4729 | 6/81/89 |
| 14. FRANCISCO CAGALINGIN | 586-72-7422 | 6/8/89 |
| 15. A SORGO LABUTAN A | 586-80-7077 | 6/8/89 |
| 16. PERCY ZAMORA REP | 586-07-1237 | 6/8/89 |
| IV. BENITO T. MENDOZA & | 18670-8951 | 6-8-89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. Nagal, Jaco | 562 - 78223 / | 6/9/89 |
| 2 Stran IN CARTRO JOE | 584-62-4525 | 6/9/89 |
| 3. MIKE C. MUNOZ | 586 69 8509 | 6/9/09 |
| 4. Din | 586-03-5772 | 4/9/89 |
| 5. TESSE B. CHACO D. BC. | 586-71-1400 | 69-61 |
| 6. PAUL L. G. SANTUS | 586-70-5013 | 6-9-89 |
| 7. PENNY C. MANDAPAT SR. | 586-03-0226 | 6-9-89 |
| 8. FROILAN H. TANGHAL SHY | 085-66-1619 | 08-09-89 |
| 9. JAMES P. FEVERAN Jameshy | 586-66-0591 | 6-9-89 |
| 10. MARYTO CRUZ (Maryhuz | 586-46-5826 | 6-9-89 |
| 11. Jacobs Jacob | 566-687797 | 6-09-189 |
| 12. Donn | 586-62-2394 | C /9/09 |
| 13. J. | 586-70-2994 | 6/9/89 |
| 14. Milita | 586-76-13-47 | 6/9/89 |
| 15. January | 561-53-4424 | 6/9/89 |
| 16. 9 | 576 03 1830 | 61689 |
| 17.BEN DB(161 | 586-64-7993 | 6/10/39 |
| 18. CRUZ JOSEPH | 566 72 1268 | 6/10/89 |
| 19. LACDO ALBERTO L | 586 01 9264 | 6/10/89 |
| 20. LUJAN JUSE A - Grethy. | 586 07 1690 | 6-10-89 |
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PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. TRUDY T. TAMONDONG 14 | 586-03-2097 | 6-8-89 |
| 2. MERREDES C-TAMONDONG | 586-60-8145 | 6-8-89 |
| 3. JANETTE C. TAMONDONG | 586-845451 | 6-9-89 |
| 4. LEXH AKN C. TAMONDONG | 586-845547 | 6-9-89 |
| 5. GRACE MARIE C. TAMONDONG | 586-84-6010 | 6-9-89 |
| 6. DIOGENES C. TAMONDONG | 586-78-3951 | Vine 9, 1989 |
| 7. RICARDO CEbre Re. | 586-74-6053 | 6-11-89 |
| 8. RLAUDIOR TAMONDONG | 586-03-2509 | 6-12-89 |
| 8. RLAUDIOR TAMONDONG 9. ROMY NISPEROS, JR. | V86-64-220V | 6/12/89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. L. GALINDEZ Adindy 2. P. Matcurine C. Halen | 1611899 | 6-9-89 |
| 2. P. Motorque C. Halen | 566669657 | 6-9-89 |
| 3. Hora Places | 586-07-1730 | 6-9-89 |
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| 9. | Michiel Malana | |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. UNIN. DORONICA | 586-68-9275 | 0/5/84 |
| 2. Rosatina J. Dononila | 586-62-1519 | 6/5/89 |
| 3. ABELISTUS CICAYANEZ | 586-05-5995 | 6/05/89 |
| 4. SEGUNDIND Payer | 586-01-9041 | 6-6-89 |
| 5. NATALIN W. CALAGUAS | 241-33-3457 | 6-6-89 |
| 6. ROGETIO E MARAVILLA | 186-66-8703 | 6-6-89 |
| 7. James Agrio | 586-70-2994 | C-Bryg |
| 8. EFREU F. CALAGUAS | 586-72-2047 | 6-6-85 |
| 9. Joseph G. Gulo | 586-64-4680 | 6-6-89 |
| 10. Veince 19, Our agra | 586-03.2974 | 6-6-89 |
| 11. Eler V. Mantanona | 561-88-9333 | 6-6-89 |
| 12. Chang B. Derje | 586-64-1946 | 6-6-89 |
| 13. DALE & ALVANEZ | 586-03-9253 | 6-6-84 |
| 14. Peris & Mingrow | 586-01-9579 | 6-6-89 |
| 15 TANA LONGO JOSE C. | 565-56-7218 | 6/8/89 |
| 16. m. D. DORENIE | 586018976 | 6/12/89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
| 1. EXME J. OFME | 584.07.4891 | 4.6.89 |
| 2. Syrica J. Ramer | 586 89 -9979 | 4-6-89 |
| 3 Max i've hoursty | 586-70-0661 | 6-6-89 |
| 4. Carina S. Analista | 586-62-0422 | 6-6-89 |
| 5. Bosky A. Oves | 586-05-2675 | 6-8-89 |
| | 586-05-6116 | C -8-89 |
| 7. Orbero B. feel | 586-09-0579 | 6-9-89 |
| s. Londa Ancheta | 586-72-5211 | 6-9-89 |
| s. Imda Ancheta neastagy | 586-64-7070 | 6-9-89 |
| 10 Jouran Balerna | 586-07-70ar | 6-9-89 |
| 11. Journ | 58-09-00xb | 6-9-89 |
| 12. Hale | 586-64-87 4 7 | 6-9-89 |
| 13 John Zjama | 586- 70-0679 | 6-9-89 |
| 14. Cerenta paneza | 186-12-1012 | 6-11-89 |
| 15. Robels & Preacin JUANITOS JUANEZA | J6-62-4210 | 6-11-89 |
| 16. AUANITOS JUANEZA | 586-64-9222 | 6-11-89 |
| 17. Steuren | 586-01-8578 | 6-11/59 |
| 16. Prosidos falla 17. Julia M. Dulla 18. William M. Julia | 586-07-15/6 | 6-12/89 |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1.NAPOLEON R.B. LIMOS | 586-74-6104 | 6-4-89 |
| 2 RICARDO D. MICLAT LOWISCAP | | 6/-4/89 |
| 3. Delias & Links DELIA LIM | 04 386-74-6123 | 6/4/80 |
| 4. Nancy Limbs Aline Limb | 596-76-9526 | 6/4/89 |
| 1 | 186-76-7882 | |
| 6. Joseph B. Pily | E65-89-8099 | 6/4/89 |
| 7 Solaffelix | 386-82-7236 | 6/4/89 |
| 8. Alue J. Simos | V76-76-9108 | 6/4/19 |
| 9. Mick Pritigo Mr | 586- 70-9744 | 6/4/89 |
| 10. Pegino Ciat | | 6/4/89 |
| 11. ALONA MICLAT | | 6/4/89 |
| 12. CAN TOUR SAN | 564-77-9674 | 6/4/89 |
| 1/3 Tollower | 546-15-2464 | 6/4/89 |
| 14 Carina Miclat II | | 6/4/89 |
| 15. EPWIN M. PELA CRUZ | 58-73-3365 | 6/4/89 |
| 16. EDNA LINIOS Ednas Limes | · • | 6/4/89 |
| 17. JOSELYN FIGUERDA Joselyn / Ju | yeron 586-80-5363 | 6/45/89 |
| 18. EDGAR U. HERMO GIND Edgar | / 1 | 6/5/89 |
| 19. MARDIEDN S. LIMOS JE. 9/55 | - V | 6/5/39 |
| 20. Ma. Louides Loxamana | | 4/5/84 |
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| The result is a second | 66 65 TD 1171/DED | |
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| NAME: PRINT & SIGN Candida L Laxamana | SS OR ID NUMBER | DATE |
| 1. Cordida L. Loxamora | 586-07-6293 | 5/4/89 |
| 2. Cesario Pere | 572-50 you | 6/7/89 |
| Rita C. Laxamana 3. Kita C. Fahamana | 586-72-7092 | 5-14/89 |
| 4. Sinfarasa Balmacody | 586-01-4801 | 5/4/89 |
| 5. Rase Join | | |
| 5. Piese Joseph LAXAMANA 6. Dimerte Desposer LAXAMANA | JR6-12 -4831 | 5/6/89 |
| 7. Mary G. Guihama Typulamo | R6-70-1994 | 6/5/89 |
| 8 balyn Guihamo Jedlyn Kuila | ina | 0/5/89 |
| 8 Dalyn Guiharno Jadlyn Guiha ANTONIETA 5 Chen 9. Antonica f. Chen 1/01estipa Marayea | 586-78-1191 | 6/5/89 |
| 10. Li entina 6. Darques | 586-03-8128 | 6/8/89 |
| MADIANOC NAROUFERO | 586-03-0993 | B/7/89 |
| 12. Manago de Mayoros 12. Morria Pl Molinos 13. Mela L. Molinos Manolito Molinos Manolito Molinos | 186-74-2371 | 6/7/89 |
| 13. Derlea & MoliNOS | 586-74-1463 | 6-7-89 |
| 14. Manually Malines | 586-79-1309 | 6-7-89 |
| Marlon Molinos 15. Marlon Molinos | 586-74-1298 | 6-7-89 |
| 16. Cardyn Laxamana | | 6-7-89 |
| _ · · · · · · · · · · · · · · · · · · · | | 6-7-89 |
| 17. Elsa Laxamana 18. Qugusto C. Laxamana augusto e foran | | - · |
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| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
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| 1. ERNESTO S. PATROLE - Grust & | Palaque 586-05-4130 | |
| 2. ARACELI A. PATAGUE: | 586-07-5063 | |
| 3 ERNESTO A. PATAGUE JR.: | 575-78-9307 | |
| 4. EUGENE A. PATAGUE: | 575-78-9746 | |
| 5. ERSON A. PATAGUE: | 586-72-9084 | • |
| 6. EARL JOHN A. PATAGUE: | 586-72-9024 | |
| 7. ERVIN A. PATAGUE = | 586-74-0469 | |
| 8. EDWARD A. PATAGUE: | 586-84-9766 | |
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- ---- ANA COLUMNIA DATEMOE

PETITION TO THE TWENTIETH GUAM LEGISLATURE IN SUPPORT OF BILL NO. 666

| NAME: PRINT & SIGN | SS OR ID NUMBER | DATE |
|------------------------------|-----------------|---------|
| 1. DEMETRID P. Eliptico | 586016457 | 6/2/89 |
| Carmelity to thick | | |
| 2. CARMELITA +- DOLOIZ | 586 05 7858 | 619189 |
| 3. Mahel P. Teroso Rose CRUZ | 586-70-6770 | 6/10/89 |
| 4. Mose Cruz | 569-54-4176 | 6-12-89 |
| 5. Eugenio Cruz | 569-54-7175 | 6.12-89 |
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| NAME: PRINT & SIGN | SS OR TO NUMBER | DATE |
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| 7.0 | SS OR ID NUMBER | |
| 1. Alfredo B. QUINGATA HON | 550-66-1687 | 6-12-89 |
| 2. CE VILT PANTANONA | 56628-9473 | 6-12-89 |
| 3. MONESTO V. DELA CRUPES | J86-05-5766 | 6-12-89 |
| 4. Marce Randocho | 5-86-01-1131 | 6-12-89 |
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General Accounting Office Report to Congress Toxic Substances: PCB Spill at the Guam Naval Power Generating Plant.

Dated: September 1988.