



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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OCTOBER 18, 1979

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The Honorable Glenn A. Anderson
The Honorable Jerry M. Patterson
House of Representatives

Subject: Navy's Efforts to Protect Workers From
Asbestos Exposure (HRD-80-2)

Pursuant to your request and later discussions with your offices, we have reviewed the Navy's efforts to protect workers from asbestos exposure at the Long Beach and Norfolk Naval Shipyards. We have also obtained information on the (1) use of asbestos in Navy ships, (2) cost of removing asbestos from Navy ships, and (3) compensation programs for asbestos-related disabilities.

According to the Navy, although all ships contain some asbestos in such components as clutches and electric cables, most ships delivered in the last several years or now under construction have little or no asbestos as thermal insulation, which was the Navy's major use of asbestos aboard ships. Navy officials told us that they do not plan a one-time asbestos removal program because the benefits of such a program do not justify the estimated \$2 billion cost.

Both shipyards had comprehensive asbestos control programs that should provide adequate worker protection if properly implemented. However, the Navy needs to do more to ensure proper implementation. These matters and information on worker compensation programs are discussed below.

NAVY'S POLICY ON USE OF ASBESTOS

The Navy's policy to eliminate the use of asbestos and materials containing asbestos, where suitable alternate materials have been designated, was issued in October 1975 after specifications had been revised to eliminate asbestos as an acceptable material for thermal insulation.

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Hazardous substances
Safety regulations
Military vessels
Workers' compensation
Fiber inhalation
Insulation (206860)
Disability benefits
Safety standards
Occupational health standards
Safety regulations
Asbestos

The Navy advised us that, although product specifications for thermal insulation had been changed in 1973 to specify the use of asbestos-free materials, asbestos materials had already been purchased and in some cases installed in ships under construction. Therefore, some ships were delivered with asbestos insulation as late as May 1978.

The Navy's October 1975 policy was to remove and replace with nonasbestos materials only insulation that was damaged or had to be removed to accomplish necessary repairs. In January 1979 the Navy told us that this policy had been modified to include selectively replacing asbestos insulation in high-maintenance areas where repairs would be expected during a ship's next operating cycle. The Navy estimated that, during the next 5 years, implementation of this policy should result in the removal and replacement of all shipboard thermal asbestos insulation except the 30 to 50 percent which normally remains untouched, except for minor maintenance, during the life of a ship. In addition, there are a few shipboard applications for which no acceptable substitute asbestos-free materials have been identified.

The Navy does not plan a one-time asbestos removal and replacement program because:)

- This would require substantial funding--about \$2 billion for all ships.
- Thirty to fifty percent of the asbestos insulation will never be touched during the useful life of a ship except for painting or making minor repairs to the lagging and cover material.
- Tests have shown that operating ships with asbestos insulation do not have excessive levels of airborne asbestos.
- Asbestos exposure is minimized through stringent work standards.
- The National Institute for Occupational Safety and Health (NIOSH) has recommended controls similar to those for asbestos for fibrous glass, a primary replacement material for asbestos. This action indicates that fibrous glass may pose a health hazard similar to that of asbestos.

The asbestos content of the Navy's ships and the Navy's views on a one-time asbestos removal program are discussed in more detail in enclosures I and II.

EFFORTS TO PROTECT SHIPYARD WORKERS

We reviewed the measures taken to protect workers at the Long Beach and Norfolk shipyards. We were assisted at Long Beach by an industrial hygienist from the California Occupational Safety and Health Consultation Service and at Norfolk by an industrial hygienist from the Occupational Safety and Health Administration (OSHA). The industrial hygienists made inspections and took air samples to determine whether there were adequate safeguards to protect shipyard workers. (For both locations some asbestos removal work was done at places other than the shipyard either by shipyard personnel or by private contractors. We did not visit those places.)

Navy instruction OPNAVINST 6260.1, issued in April 1974 and revised in August 1978, provides for establishing and maintaining an asbestos control program. This instruction is supplemented by instructions issued by both the Long Beach (issued October 1977) and the Norfolk (issued March 1978) shipyards.

Both shipyards had established comprehensive programs to protect their workers. The programs require (1) the use of protective clothing and equipment by asbestos workers, (2) monitoring of airborne asbestos fibers in areas where asbestos work is being done, (3) procedures for cleaning up and disposing of asbestos waste, (4) formal training programs, and (5) medical surveillance for asbestos workers.

Workers doing asbestos removal operations (rip-outs) are to be provided work clothes, disposable coveralls, hoods, plastic shoe covers and gloves, and full-face air-line respirators. Before the rip-out is started, the ship's compartment must be isolated, the ship's ventilation system blocked off, local ventilation provided, warning signs posted, and guards posted at the entryway. After the rip-out is done and the area cleaned up, a shipyard asbestos monitor or an industrial hygienist must test the air for asbestos fibers to determine if the area is safe for workers to enter without required protective equipment.

When possible, rip-outs are to be done on the second and third shifts to minimize possible exposures of other workers. Minor rip-outs and repairs may be done anytime. Both shipyards had designated asbestos program coordinators responsible to the shipyard commanders for establishing, monitoring, and enforcing an asbestos control program.

The shipyards' written programs conform with OSHA's requirements for protecting workers who may be exposed to excessive levels of asbestos. Both industrial hygienists who assisted us said that, if properly implemented, the programs should provide adequate protection against the health hazards that could result from asbestos exposures. However, greater efforts are needed to assure that safe work practices are followed. At the time of our review, the shipyards did not have enough staff to adequately monitor and enforce their programs.

Some workers and supervisors reportedly did not always take protective measures because such precautions slow down the work. Also, personal protective clothing and equipment were sometimes not used or were used improperly because they are uncomfortable and cumbersome. For example, the protective clothing increases body heat, and some workers will open the clothing to cool off. In addition, workers have difficulty moving around obstacles or in confined spaces wearing full-face respirators and dragging air supply lines.

Examples of the program deficiencies we noted at each shipyard are discussed below.

Long Beach Naval Shipyard

At the time of our visit, although some asbestos work was being done, no major rip-out was underway. Dust samples taken by the industrial hygienist aboard two ships contained asbestos dust, indicating that required cleanup had not been done properly. He found several pipe ends with exposed asbestos in the fire room of one ship. He also found asbestos fibers on some pipes that had been stripped of asbestos insulation.

Although shipyard workers are provided adequate protective clothing and equipment, several workers told us that some workers do not use it. We were told also that some members of the ships' crews use compressed air to clean

asbestos work areas, which blows asbestos fibers and dust into the air.

The shipyard has had a full- or part-time asbestos inspector since November 1977. Since then the inspectors have kept a log of the asbestos control program violations they noted. Logbook entries showed that program violations occurred frequently and that some exposure of unprotected workers may have resulted.

Norfolk Naval Shipyard

The industrial hygienist said that personal protective equipment and other protective measures were properly used during the rip-out he observed, with one exception. Three workers wearing respirators had full beards, which could result in improperly fitting respirators. However, some workers told him that proper protective measures were not always taken.

Although the shipyard had an asbestos program coordinator, no one person was aware of all asbestos activities going on. The coordinator was also the superintendent of the pipe shop; he had other duties and responsibilities, including the removal of asbestos insulation. He did not have enough time to effectively oversee all the asbestos jobs. In May 1979, we were told that the asbestos program coordinator position had been made a full-time job.

Because of insufficient industrial hygiene staff, some shipyard workers were trained as asbestos monitors or counters to take air samples in work areas and to count the asbestos fibers in the samples taken. Our consultant said that the asbestos monitors were not adequately supervised to ensure that enough samples were taken in the right place at the right time.

Industrial hygienists' conclusions

The industrial hygienist who assisted us at Long Beach saw a need for

- better control and supervision of work practices and better use of personal protective clothing,

- better planning and coordination of asbestos rip-out and repair operations,
- more emphasis on engineering controls to reduce airborne concentrations of asbestos,
- additional industrial hygiene staff to monitor and evaluate the asbestos control program, and
- additional staff in the safety group to monitor rip-out operations aboard ships to make sure shipyard instructions are followed.

The industrial hygienist who assisted us at Norfolk said that more technically qualified personnel were needed to monitor asbestos removal and repair operations and to enforce compliance with shipyard regulations. Specifically, he said the shipyard needed

- additional industrial hygiene staff,
- a respirator fit test program,
- a qualified individual responsible for the asbestos control program, and
- more worker education and training on asbestos hazards.

Navy studies of shipyards' efforts to protect workers from asbestos

In 1977 the Navy began to review all naval shipyards to ascertain compliance with asbestos control procedures and to determine whether further headquarters or local directions were needed. The reviews, which were completed at Norfolk in February 1977 and at Long Beach in March 1978, were made by special teams that included occupational safety and health personnel. The teams found numerous deficiencies--some serious--and recommended that each shipyard establish internal procedures to provide for quarterly asbestos self-evaluations through fiscal year 1979.

As of June 1, 1979, Long Beach had reported that about 90 percent of the deficiencies noted during the Navy's review had been corrected. As of February 1979, Norfolk had reported

that about 95 percent of the initially noted deficiencies had been corrected.

DISABILITY COMPENSATION PROGRAMS

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Several disability compensation programs are available for present and former naval employees who believe an asbestos-related health problem resulted from their Navy employment. These programs were designed to compensate not only for asbestos-related disabilities, but for various types of disabling injuries and illnesses. Which compensation program applies generally depends on the employment status of the individual affected.

Present and former Federal civilian employees are covered by the Federal Employees' Compensation Program, which provides benefits for injury, occupational disease, or death resulting from or proximately caused by the performance of duties as a Federal employee. Federal civilian employees may also be covered under the Civil Service Retirement System. However, they cannot receive benefits under both programs at the same time. The Civil Service program covers only total disability and compensates for the inability to perform useful and efficient service in the last position occupied. The disability need not be work related.

Active-duty military personnel who have an asbestos-related illness are covered by the Military Retirement System. The disability need not be work related if the claimant has 20 years of service. Otherwise eligibility for benefits depends on whether the percentage of disability is at least 30 percent and whether the claimant has at least 8 years of service or, if less, whether there is a causal relationship between the disability and duties performed. Former military personnel who believe they have an asbestos-related problem resulting from exposure while on active duty may be covered by the Veterans Disability Benefits Program. This program provides benefits for total and partial service-connected disabilities. The program also has provisions for granting pensions to qualifying veterans with a permanent, total, non-service-connected disability.

Contractor employees who have done asbestos work for the Federal Government may be covered by the Longshoremen's and Harbor Workers' Compensation Act, social security disability benefits, or a State workmen's compensation program. Temporary or part-time Federal employees who are usually not covered by the Civil Service System are covered by social

security. Eligibility requirements and benefits paid under the Longshoremen's and Harbor Workers' Compensation Act are similar to those of the Federal Employees' Compensation Act. To obtain social security benefits, the worker must have worked long enough to acquire insured status and must be unable to engage in any substantial gainful activity. The impairment need not be job related. Eligibility requirements and the benefits paid by workmen's compensation programs vary depending on State laws.

CONCLUSIONS

Although recently constructed Navy ships have little or no asbestos thermal insulation, other Navy ships contain large quantities of asbestos. The Navy believes a special program to substitute other insulating materials for asbestos is not warranted because it would be very costly and provide limited benefits. Thus, shipyard employees will continue to work with or near asbestos for many years as ships are repaired and overhauled.

The Navy has made considerable efforts to protect workers from asbestos. But safe work practices are not always followed. Better supervision, training, and workplace monitoring and increased use of engineering controls when feasible can help further reduce exposure. However, as long as ships contain asbestos insulation, some exposures are probably inevitable.

RECOMMENDATIONS

We recommend that the Secretary of Defense

- ensure that naval shipyard asbestos control and personnel protection programs are effectively monitored and enforced and
- provide sufficient resources to effectively implement these programs.

AGENCY COMMENTS AND OUR EVALUATION

The Navy Department concurred in our recommendations and advised us that it was continuing to make improvements through organizational changes, staffing increases, and internal audits.

The Navy stated that the Congress had not provided funds to cover the fiscal year 1979 cost of its selective asbestos rip-out program. We were later advised that this denial would not hinder the Navy's plans to complete this program over a 5-year period, provided that future funding requests are approved by the Congress.

According to the Navy, our report implied that an exposure to asbestos carries with it the certainty of disease. It suggested the following clarifying language.

"Any reference in this report to an 'exposure' to asbestos is to be construed as meaning coming into contact with an environment containing airborne asbestos fibers in concentrations greater than those permitted by OSHA standards. Further no inference as to the result of such exposure, i.e., disease, is intended."

We do not intend to imply that every person exposed to asbestos fibers in excess of OSHA's standard will contract an asbestos-related disease. We believe, however, that the Navy's suggested language goes too far in the other direction. In December 1976, NIOSH stated in its revised recommended asbestos standard that, although there are data showing that the risk of cancer is lower at lower exposure levels, excessive cancer risks have been demonstrated at all levels of asbestos exposure studied. NIOSH recommended that the asbestos standard be set at the lowest level detectable by available analytical techniques, which is about one-twentieth of the present standard. Thus, while exposure to asbestos presents no certainty of an asbestos-related disease, such a disease is a possibility even at exposure levels substantially below OSHA's standard.

The Navy said it is developing a protective suit which allows for body cooling. The suit, which is undergoing an industrial hygiene evaluation, should increase worker comfort and productivity. The Navy plans to seek OSHA and NIOSH approval of the suit on a priority basis. The Navy added that its shipyards were reviewing controls on facial hair and developing stronger language to prohibit any hair that interferes with a good respirator face seal.

We recognize that the Navy has made and continues to make considerable efforts to improve its asbestos worker protection program. Its current efforts to improve program surveillance, develop more comfortable personal protective clothing, and improve respirator fit should help minimize the possibility for exposure to excessive levels of asbestos fibers.

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As arranged with your offices, we are sending copies of this report to the Senate Committee on Labor and Human Resources; the Subcommittee on Labor Standards, House Committee on Education and Labor; and Congressman George Miller. We are also sending copies to the Director, Office of Management and Budget; the Secretary of Defense; and the Secretary of the Navy. Copies will also be made available to other interested parties who request them.


ACTING Comptroller General
of the United States

Enclosures - 3



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, D. C. 20350

IN REPLY REFER TO
Ser 4542/318054
5 Jan 1979

Mr. Robert F. Hughes
Assistant Director
U. S. General Accounting Office
Human Resources Division
Washington, D. C. 20548

Dear Mr. Hughes,

This is in response to your letter of October 5th in which you requested information on the extent to which asbestos is being used in the Navy's shipbuilding and ship repairing operations. This response reflects our understanding of the scope/detail of your request as amplified by Mr. Joseph Daigle of your staff during a meeting in late October.

In response to questions 1, 2 and 4, attachment #1 provides a listing of U. S. Navy ships (class, name and hull number) which were delivered since 1973 or are under construction and also provides information regarding the status of thermal insulation. Each ship has several types of asbestos containing materials installed; however, thermal insulation for machinery, equipment and piping systems has been the major application of asbestos.

Even though the use of asbestos as thermal insulation has been eliminated, there remain a few shipboard applications where technically acceptable substitute asbestos-free materials have not yet been identified. Therefore, all ships presently in service contain some quantity of asbestos.

Asbestos fibers are incorporated in the plastic-like body of certain electrical resistors found in home, TV and stereo equipment and in Navy electronic equipment. Asbestos is used in home and office floor tiling and on Navy ship decks. Asbestos is used on electric cabling found in many commercial ovens, home hot water heaters and in Navy galley ranges. Piping system gaskets and packing used throughout thousands of American industries and homes and in Navy shipboard piping systems contain asbestos. Asbestos is used in automotive brakes and clutches and in Navy ship equipment brakes and clutches. The list is nearly endless. There are so many common uses of asbestos that it is nearly impossible to build a Navy ship free of the mineral.

In regard to question #3, data concerning the amount of asbestos used as thermal insulation in Navy ships is obtainable by search of weight control reports for individual ships. The USS PAUL F. FOSTER (DD-964) contains 87,634 pounds of thermal insulation. The quantity of thermal insulation used on the remaining classes of ships (CCNs, SSNs, YTBs, YONs, AORs and AGORs) listed in Attachment #1 as having asbestos thermal insulation will be provided not later than 15 January 1979. It must be pointed out that this information will be the weight of thermal insulation installed and will not include the amount of asbestos used in other applications, such as pipe hanger liners, gaskets, etc.

You also asked why non-asbestos materials could not be used for thermal insulation in all ships delivered since 1973. Shipbuilding is an enormously complex task. For large ships, it takes 10 or more years from conceptual design to deliver the first of a class. The design of systems and components, the assemblage of materials, contract placement, work scheduling, hiring and training of workers and many other complex aspects must be carefully coordinated. When such a basic, fundamental change as switching from asbestos insulation to fiberglass insulation is made, all these aspects are affected. It is simply not possible to change, in an instant, from asbestos insulation to non-asbestos insulation throughout the Navy fleet. Decisions to replace asbestos thermal insulation with non-asbestos materials had to be made on an individual ship or ship class basis, considering the state of ship construction completion and the cost and schedule delay associated with the change. Likewise, it was necessary to negotiate contract modifications with each shipbuilder to eliminate the installation of asbestos. In some cases, the Navy was successful well before 1973-74. For example, the Navy approved use of asbestos-free materials in CVN 68 class propulsion plants in 1971 and in the last two SSN 637 class submarine propulsion plants in 1972. For other ships, such as the first eleven of our new DD 963 class ships, the change was not accomplished until later. Consequently, ships well under construction and already insulated at that time continued through to delivery as late as May 1978 with asbestos insulation. Consequently, some ships were delivered with asbestos thermal insulation since 1973.

Additionally, I must correct your apparent misconception of the importance of the 1973-74 date. The Navy usually procures materials for ship construction, including thermal insulation, in accordance with product specifications. These documents describe, for the supplier, the product the Navy wants. In the case of insulation specifications, changes were made as early as 1971 to specify that the Navy wanted materials with little or no asbestos. By late 1973, these specifications had been changed to call for asbestos-free materials. The fact, however, that these product specifications were changed to call for asbestos-free materials does not mean that shipbuilders must stop using asbestos products. Many ship-sets of asbestos containing products, purchased to earlier versions of the product specification had already been bought and in some cases installed. Tens of thousands of pounds of asbestos products remained in warehouses, aboard ships, and in shipyards, in active use. With no positive action by the Navy, many additional years would pass before the asbestos products were exhausted. Although, in some cases, separate action by some Navy components resulted in asbestos-free products being used prior to 1973 or 1974, the overall Navy policy prohibiting the use of such material could not be promulgated until we had some assurance that it could be followed. By 1975, asbestos-free materials were generally available to all Navy agencies and the no-asbestos policy statement, NAVSEAINST 5100.2 of 24 October 1975 issued. I hope this clarifies this important point.

In regard to question #5, non-asbestos materials approved by the Department of the Navy for use as thermal insulation on naval ships include calcium silicate (with non-asbestos fillers), fibrous glass, refractory felt (alumina/silica), elastomeric foam and cellular glass. While all types are currently being used, fibrous glass and calcium silicate are the two principal asbestos replacement materials for thermal insulation.

In response to question #6, cost data for reinsulating some types of ships with non-asbestos materials have been developed and are as follows:

CLASS	EST. COST PER SHIP (Million)	ACTIVE SHIPS	TOTAL EST. COST (Million)
FRIGATE:			
FF-1037	\$2.75	2	\$ 5.50
FF-1040	2.75	10	27.50
FF-1052	4.32	45	194.40
DESTROYER:			
DD & DDG	5.37	65	349.05
SUBMARINE:			
SSN-578	1.62	4	6.48
SSN-594/637	3.90	57	222.30
SSBN	3.90	41	159.90
Total		224	\$965.13

These estimates are for the removal of asbestos thermal insulation from piping, equipment and ventilation ducting, excluding nuclear equipment components, and reinsulation with non-asbestos material. These estimates do not include asbestos removal/replacement in applications other than thermal insulation, and do not include the whole fleet, only about half of it. Furthermore, these cost estimates are tentative and have not been validated. It is anticipated that return cost data for total thermal re-insulation obtained from three ships, will be available in February 1979. These tentative estimates and return cost data mentioned above can be extrapolated to obtain a cost estimate to reinsulate the entire fleet.

Regarding removal of all asbestos aboard Naval vessels, Navy policy has required replacement of asbestos insulation with substitute material when insulated equipment and machinery are repaired. Recently, this policy has been modified to require, in addition, selective replacement of asbestos insulation in those high-maintenance areas where repairs may be anticipated during the subsequent operating cycle of the vessel. During the next five years, implementation of this policy will result in the removal of all shipboard thermal asbestos except that 30 to 50 percent which is normally untouched during the life of the ship.

The concept of one-time total asbestos removal on all ships has been under intensive review to determine if such a policy revision is technically and economically feasible. Initial analysis does not justify such a policy change. While there is no intention to conduct a trade-off of human health for maintenance and repair funds, the funds involved are substantial. As indicated above, the estimated cost to reinsulate just three classes of ships (frigates, destroyers, and submarines) is \$965.13 million. It is reasonable to assume that the estimated cost for total asbestos replacement in all ships will approach two billion dollars. The true cost is likely to increase significantly because of delay and disruption effects, increased overhead charges due to longer overhauls, and increased shipyard manning to handle the added work.

This enormous cost is not the only reason that the Navy has not adopted a one-time total asbestos removal policy. Other factors which support the present policy are the following:

a. During the life of a ship, 30 to 50 percent of the total asbestos insulation will never be touched except for painting or making minor repairs to the lagging cover material. Measurements show that operating ships equipped with asbestos insulation have airborne asbestos levels at or below 0.1 fibers per cubic centimeter. This value is comparable to the ambient level reported for the City of Philadelphia by Dr. Irving Selikoff, a well known asbestos expert. Therefore, on the basis of existing information, a properly maintained and operating ship should not present an active asbestos hazard.

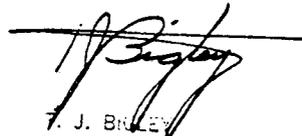
b. The Navy requires and enforces stringent asbestos work standards which control exposure of workers to asbestos dust during ship repair. By minimizing the amount of asbestos work done, the potential exposure, residual dust, and overhaul cost are minimized.

c. Fibrous glass and calcium silicate products are being used as asbestos replacements. The National Institute for Occupational Safety and Health has recommended controls for fibrous glass work that are nearly identical to the controls now imposed for asbestos work. It seems reasonable to assume that if the Institute recommends nearly identical controls for two similar substances, comparable hazards could be known or suspected. Therefore, it is not at all certain that wholesale replacement of asbestos products gains any medical advantage at all.

d. Despite the enormous cost, replacement of asbestos thermal insulation in ships will not eliminate asbestos exposure of civilian and military Navy personnel. According to the National Institute for Occupational Safety and Health, asbestos dust is everywhere. Low but easily measurable levels of airborne asbestos dust are found in the air of cities throughout the country, much of it generated by automotive brake and clutch linings. Asbestos is used in so many products that most of the U. S. populace unknowingly encounters it daily.

I hope this information satisfactorily answers your inquiry regarding the extent to which asbestos is being used in the Navy's shipbuilding and ship repairing operation.

Sincerely,



F. J. BRACEY
Vice Admiral, U.S. Navy
Deputy Chief of Staff
Operations (Logistics)

ATTACHMENT #1

LIST OF U. S. NAVY SHIPS
DELIVERED SINCE 1973 OR UNDER CONSTRUCTION
(Ship Class, Name and Hull Number and Status of Thermal Insulation)

ENCL (1) TO CNO SER 4542/318054 OF 5 Jan 1979

NAME	HULL NO.	DATE		THERMAL INSULATION (See Note 1)
		START	DEL.	
AMPHIBIOUS ASSAULT SHIP (GENERAL PURPOSE) - LHA				
TARAWA	1	1/71	5/76	Asbestos-free thermal insulation except for boiler casing insulation and removalable pads.
SAIPAN	2	11/71	8/77	Asbestos-free thermal insulation except for boiler casing insulation.
BELLEAU WOOD	3	8/72	9/78	Asbestos-free thermal insulation.
NASSAU	4	5/73	7/79	Asbestos-free thermal insulation.
PELELIU	5	4/74	5/80	Asbestos-free thermal insulation.
DESTROYER - DD				
SPRUANCE	963	6/72	8/75	
PAUL F. FOSTER	964	10/72	2/76	
KINCAID	965	2/73	6/76	
HEWITT	966	2/73	9/76	
ELLIOT	967	7/73	12/76	
ARTHUR W. RADFORD	968	7/73	4/77	Asbestos thermal insulation
PETERSON	969	1/74	6/77	
CARON	970	1/74	9/77	
DAVID R. RAY	971	4/74	10/77	
OLDENDORF	972	4/74	1/78	
JOHN YOUNG	973	4/74	5/78	
COMTE DE GRASSE	974	4/74	7/78	
O'BRIEN	975	12/74	11/77	
MERRILL	976	12/74	1/78	
BRISCOE	977	3/75	5/78	
STUMP	978	3/75	7/78	
CONOLLY	979	6/75	9/78	
MOOSBRUGGER	980	6/75	1/79	
JOHN HANCOCK	981	8/75	4/79	
NICHOLSON	982	8/75	6/79	
JOHN RODGERS	983	10/75	9/79	Asbestos-free thermal insulation
LEFTWICH	984	10/75	11/79	
CUSHING	985	12/75	2/80	
HARRY W. HILL	986	12/75	3/80	
O'BANNON	987	3/76	4/80	
THORN	988	3/76	5/80	
DEYO	989	11/76	6/80	
INGERSOLL	990	11/76	7/80	
FIFE	991	7/77	9/80	
FLETCHER	992	7/77	9/80	

NAME	HULL NO.	DATE		THERMAL INSULATION (See Note 1)
		START	DEL.	
GUIDED MISSILE FRIGATE - FFG				
OLIVER HAZARD PERRY	7	12/74	11/77	
MCINERNEY	8	12/76	1/80	
WADSWORTH	9	1/77	2/80	
DUNCAN	10	2/77	3/80	
CLARK	11	1/77	6/80	
GEORGE PHILIP	12	4/77	7/80	
Unchristened	13	3/77	10/80	
SIDES	14	7/77	11/80	Asbestos-free thermal insulation
Unchristened	15	3/77	2/81	
Unchristened	16	3/77	5/81	
H.M.A.S. ADELAIDE	17	5/77	8/80	
H.M.A.S. CANBERRA	18	11/77	12/80	
Unchristened	19	1/78	4/81	
ANTRIM	20	2/78	4/81	
Unchristened	22/23	6/78	8/81	
FRIGATE - FF				
AINSWORTH	1090	11/69	2/73	
MILLER	1091	12/69	4/73	
THOMAS C. HART	1092	12/69	6/73	
CAPODANNO	1093	1/70	10/73	Asbestos thermal insulation
PHARRIS	1094	4/70	12/73	
TRUETT	1095	4/70	5/74	
VALDEZ	1096	5/70	7/74	
MOINESTER	1097	5/70	10/74	
PATROL, COMBATANT MISSILE (HYDROFOIL) - PHM				
PEGASUS	1	2/73	6/77	Asbestos-free thermal insulation. However, non-structural bulkheads constructed of Marinite which contains asbestos.
GUIDED MISSILE CRUISER (NUCLEAR PROPULSION) - CGN				
CALIFORNIA	36	8/69	2/74	Asbestos thermal insulation
SOUTH CAROLINA	37	3/70	11/74	
VIRGINIA	38	12/71	8/76	Asbestos-free thermal insulation.
TEXAS	39	8/72	7/77	except for a few removable pads
MISSISSIPPI	40	11/73	7/78	in propulsion plant.
ARKANSAS	41	9/74	6/80	
FLEET OCEAN TUG - T-ATF				
POWHATAN	166	6/76	11/78	
NARRAGANSETT	167	1/77	6/78	
CATAWBA	168	1/77	9/79	
NAVAJO	169	1/77	11/79	Asbestos-free thermal insulation
Unchristened	170	8/78	12/80	
Unchristened	171	8/78	12/80	
Unchristened	172	8/78	3/81	

NAME	HULL NO.	DATE		THERMAL INSULATION (See Note 1)
		START	DEL.	
AIRCRAFT CARRIER (NUCLEAR PROPULSION) - CVN				
NIMITZ	68	10/67	4/75	Asbestos-free thermal insulation
EISENHOWER	69	2/70	9/77	except for catapult trough insulation.
VINSON	70	2/75	-	Asbestos-free thermal insulation except for catapult trough insulation.
DESTROYER TENDER - AD				
YELLOWSTONE	41	1/77	1/80	Asbestos-free thermal insulation.
ACADIA	42	7/77	9/80	
Unchristened	43	5/78	8/81	
OILER - AO				
	177	1/78	12/79	Asbestos-free thermal insulation
	178	5/78	6/80	
SUBMARINE TENDER - AS				
EMORY S. LAND	39	6/75	1/79	Asbestos-free thermal insulation
FRANK CABLE	40	10/75	9/79	
MCKEE	41	8/77	8/81	
SUBMARINE (NUCLEAR PROPULSION) - SSN				
WILLIAM H. BATES	680	10/68	5/73	
TUNNY	682	2/69	1/74	
PARCHE	683	9/69	8/74	Asbestos thermal insulation
CAVALLA	684	2/69	4/73	
GLENARD P. LIPSCOMB	685	5/69	12/74	
L. MENDEL RIVERS	686	9/70	12/74	
RICHARD B. RUSSELL	687	1/71	8/75	Asbestos-free thermal insulation
LOS ANGELES	688	5/71	11/76	
BATON ROUGE	689	1/72	6/77	
PHILADELPHIA	690	7/72	6/77	
MEMPHIS	691	6/73	12/77	
OMAHA	692	10/71	3/78	
CINCINNATI	693	9/72	5/78	
GROTON	694	10/71	6/78	Asbestos free thermal insulation
BIRMINGHAM	695	5/73	11/78	except for air conditioning access
NEW YORK CITY	696	10/72	3/79	plate covers which are being
INDIANAPOLIS	697	3/73	8/79	changed to asbestos free materials
BREMERTON	698	1/74	10/79	and a few removable pads in the
JACKSONVILLE	699	4/74	2/80	propulsion plant.
DALLAS	700	6/74	6/80	
LA JOLLA	701	4/75	10/80	

NAME	HULL NO.	DATE		THERMAL INSULATION (See Note 1)
		START	DEL.	
SUBMARINE (NUCLEAR PROPULSION) - SSN				
PHOENIX	702	6/75	2/81	
BOSTON	703	7/75	6/81	
BALTIMORE	704	7/76	2/82	
Unchristened	705	8/76	6/82	
Unchristened	706	8/76	10/82	
Unchristened	707	8/76	1/83	Asbestos free thermal insulation
Unchristened	708	8/76	9/83	except for air conditioning access
Unchristened	709	8/76	1/84	plate covers which are being
Unchristened	710	8/76	5/84	changed to asbestos free materials
SAN FRANCISCO	711	2/76	7/80	and a few removable pads in the
Unchristened	712	6/76	6/81	propulsion plant.
Unchristened	713	3/76	2/82	
Unchristened	714	4/78	9/82	
FLEET BALLISTIC MISSILE SUBMARINE (NUCLEAR PROPULSION) (TRIDENT) - SSBN				
OHIO	726	7/74	11/80	
MICHIGAN	727	8/75	11/81	
Unchristened	728	2/76	7/82	Asbestos-free thermal insulation.
Unchristened	729	1/77	3/83	
Unchristened	730	2/78	11/83	
LARGE HARBOR TUG - YTB				
HYANNIS	817	1/72	5/73	
MECOSTA	818	1/72	6/73	
IUKA	819	1/72	7/73	
WANAMASSA	820	1/72	7/73	
TONTOGANY	821	1/72	7/73	Asbestos thermal insulation.
PAWUSKA	822	1/72	9/73	
CANONCHET	823	1/72	9/73	
SANTAQUIN	824	1/72	9/73	
WATHENA	825	1/72	10/73	
WASHTUCNA	826	1/72	12/73	
CHETEK	827	1/72	12/73	
CATAHECASSA	828	6/73	8/74	
METACOM	829	6/73	9/74	
PUSHMATAHA	830	6/73	10/74	
DEKANAWIDA	831	6/73	10/74	
PETALESHARO	832	6/73	11/74	Asbestos-free thermal insulation.
SHABONEE	833	6/73	12/74	
NEGWAGON	834	6/73	5/75	
SKENADA	835	6/73	6/75	
POKAGON	836	6/73	6/75	
	838	2/74	6/75	

NAME	HULL NO.	DATE		THERMAL INSULATION (See Note 1)
		START	DEL.	
FUEL OIL BARGE - YON				
	282	3/72	8/73	
	283	3/72	8/73	
	284	4/73	12/74	
	285	4/73	9/75	
	286	7/73	12/74	
	287	3/74	1/75	
	288	7/73	9/75	Not Applicable
	289	1/74	10/75	
	291	9/74	4/75	
	292	3/75	11/75	
	293	2/75	10/75	
	294	4/75	3/76	
	295	5/75	3/76	
REPLENISHMENT OILER - AOR				
KALAMAZOO	6	3/69	7/73	Asbestos thermal insulation.
ROANOKE	7	10/73	10/76	Asbestos-free thermal insulation.
OCEANOGRAPHIC RESEARCH SHIP - AGOR				
GYRE	21	8/72	11/73	Asbestos thermal insulation.
MOANA WAVE	22	9/72	1/74	

Note 1. As used herein, thermal insulation refers to such insulation for machinery, equipment and piping. In addition to the exceptions noted for specific ships, asbestos is also used in shipboard applications for which no suitable (asbestos-free) substitutes have as yet been designated, i.e., gaskets and pipe hanger liners.



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, D.C. 20350

IN REPLY REFER TO
Ser 454D/318571
8 February 1979

Dear Mr. Hughes,

In further response to your inquiry of October 5, 1978 for information on asbestos use in the Navy's shipbuilding and ship repair operations, it is estimated that the quantity of thermal insulation used on each major class of ships is as follows:

<u>Ship Class</u>	<u>Estimate of Thermal Insulation (lbs)</u>
Destroyer - DD	87,634
Guided Missile Cruiser - CGN	123,770
Submarine - SSN	62,465
Replenishment Oiler - AOR	78,515
Oceanographic Research Ship - AGOR	*
Large Harbor Tug - YTB	6,858
Fuel Oil Barge - YON	**

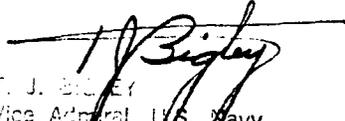
* Weight control reports for AGOR class ships have not been prepared. Data unavailable.

**Weight control reports for YONs do not make any reference to thermal insulation.

As noted in my earlier response of January 5th, this information represents the weight of thermal insulation installed and does not include asbestos used in other applications, such as pipe hanger liners, gaskets, etc.

I hope that this information satisfactorily answers your question regarding the extent of thermal insulation being used in the Navy's shipbuilding and ship repair operations.

Sincerely,


T. J. BIGLEY
Vice Admiral, U.S. Navy
Deputy Chief of Naval
Operations (Logistics)

Mr. Robert F. Hughes
Assistant Director
U. S. General Accounting Office
Human Resources Division
Washington, D C. 20548



DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20350

12 SEP 1979

Mr. Gregory J. Ahart
Director, Human Resources
Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Ahart:

The enclosed comments reply to your letter of 6 July 1979 to the Secretary of Defense regarding "Asbestos Pollution Problems at U. S. Naval Shipyards" (HRD 79-99, OSD Case #5230).

Sincerely,

Everett Pyatt

EVERETT PYATT

Principal Deputy

Assistant Secretary of the Navy
(Logistics)

Enclosure

GAO note: The page and line references in the enclosure to this letter may not correspond to those in the final report.

Department of the Navy Comments
on
GAO Draft Report
on
Asbestos Pollution Problems at
U.S. Naval Shipyards
(OSD Case #5230)

1. GAO Findings and Recommendations

GAO found that "although recently constructed Navy ships have little or no asbestos insulation, other Navy ships contain large quantities of asbestos. The Navy believes a one-time asbestos removal program is not warranted because it would be very costly and provide limited benefits. It was also found that while the Navy has made considerable efforts to protect workers from asbestos, more needs to be done to ensure proper implementation of safety procedures. GAO recommended that: (1) naval shipyard asbestos control and personnel protection programs be effectively monitored and enforced; and (2) sufficient resources be provided to effectively implement these programs.

2. Summary of Department of the Navy Position

a. The Navy concurs in the recommendation for effective monitoring and enforcement of asbestos controls.

b. Actions are continuing within the Navy to effect improvements through organizational changes, staffing increases and internal audits.

3. Specific Navy Comments on the Draft Report

a. The report gives the general connotation that an exposure to asbestos carries with it the certainty of disease. This inference could be attenuated by use of the following explanatory language in an introductory paragraph.

"Any reference in this report to an 'exposure' to asbestos is to be construed as meaning coming into contact with an environment containing airborne asbestos fibers in concentrations greater than those permitted by OSHA standards. Further, no inference as to the result of such exposure, i.e., disease, is intended."

b. In the discussion of the Navy's selective asbestos rip-out program, the fact that the Congress failed to provide funds requested in FY 79 should be acknowledged.

c. Page 3, lines 11 and 12 - The statement as worded omits an important qualification provided in the Navy reasoning for not adopting a one-time total asbestos removal policy (see enclosure (1), page 5, paragraph a, first sentence). Recommend GAO add the following phrase to the end of the statement: "except for painting or making minor repairs to the lagging and cover material".

d. Page 3, lines 18-21 - As worded, the sentence implies that there are options in lieu of fibrous glass, which may not always be true. Recommend inserting "a primary" in place of "one of the" and making "materials" singular.

e. Page 6, second paragraph - Regarding the discussion of protective clothing problems (discomfort/heat), the Navy has long recognized the need to improve worker comfort. The Philadelphia Naval Shipyard has developed a protective suit that allows for body cooling. This suit is undergoing an industrial hygiene evaluation to insure it meets or exceeds the personnel protection required by current OSHA respiratory protection standards. When approved for use, it should enable substantial annual savings in direct procurement costs made possible by its one-piece construction instead of the several garment pieces which must now be separately procured and taped together when worn. In addition to direct procurement cost savings, the use of vortex-cooled air for body cooling should greatly increase worker comfort, improve worker morale and, consequently, result in productivity/cost benefits of potential greater value than the procurement cost savings. The Navy will seek OSHA and NIOSH approval of the Philadelphia suit on a priority basis in order to realize the above urgently needed benefits.

f. Page 7, last line - While a full beard could result in an improperly fitting respirator, there is no positive indication based solely on observation that a program deficiency does exist. Nonetheless, the naval shipyards are currently reviewing controls on facial hair and are developing stronger language that will prohibit any hair that interferes with a good respirator face seal.