



UNITED STATES MARINE CORPS
10th Marines, 2d Marine Division, FMF
Camp Lejeune, North Carolina 28542-5515

IN REPLY REFER TO

6240
S-4
19 Oct 87

From: Regimental HMDO
To: Regimental Commanding Officer
Via: Regimental S-4 Officer

Subj: HAZARDOUS WASTE MINIMIZATION THROUGH USE OF CITRIKLEEN
CLEANING AGENT

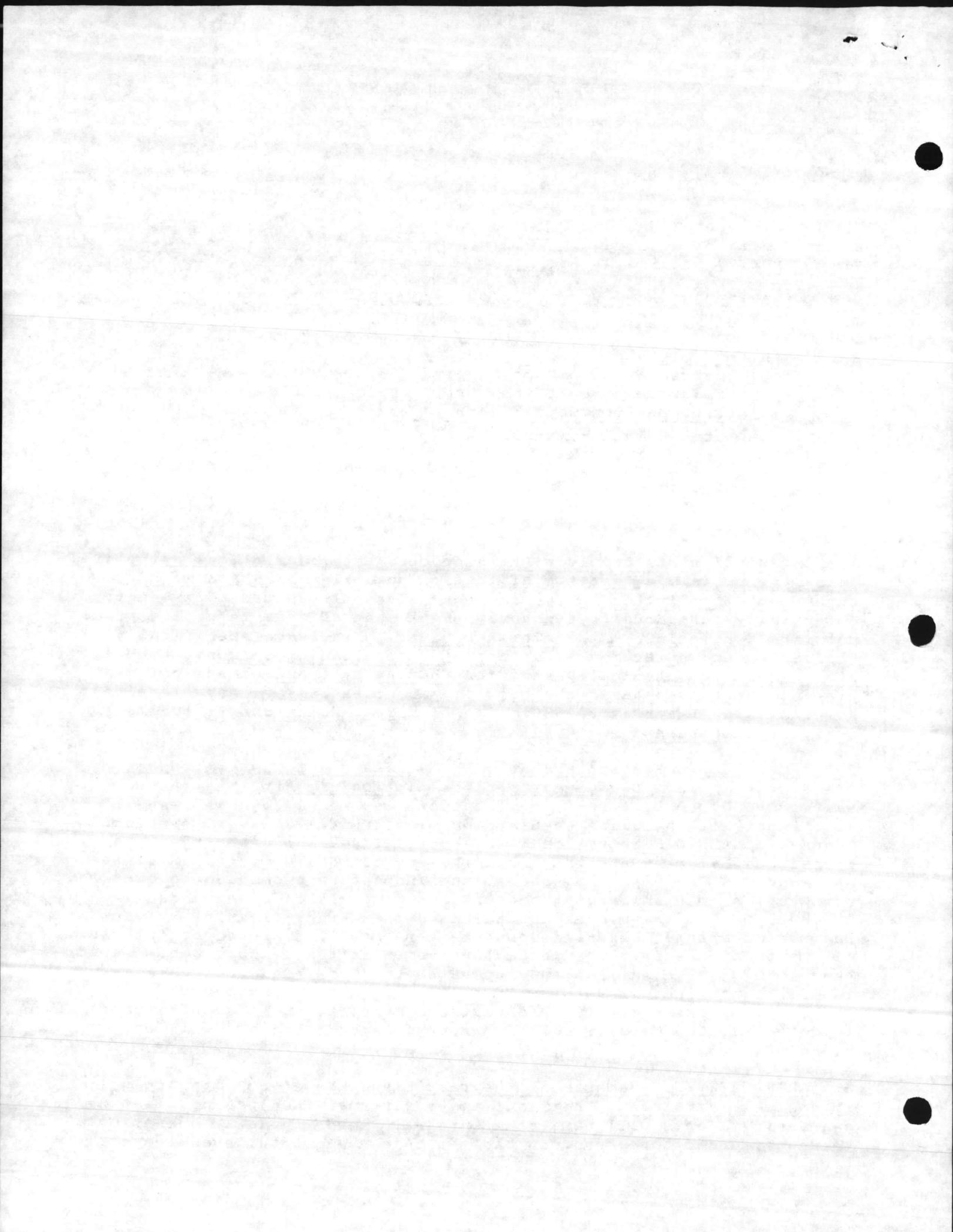
Ref: (a) MCO 6240.5A
(b) Discussion btwn Capt Higgins (Regt HMDO) and Mr. Hensley
(Sales Rep, Penet'one Corp.) on 18 Sep 87
(c) PhoneCon btwn Capt Higgins (Regt HMDO) and Ms. BETTS
(Base Envir. Chemist, CLNC) on 22 Sep 87

Encl: (1) Photograph of Safety-Kleen 20-Gallon Circulating Parts
Cleaner
(2) Citrikleen Information Report
(3) Citrikleen Material Safety Data Sheet and Toxicity Report

1. In an effort to comply with hazardous waste regulations stipulated in reference (a), a 'waste minimization' campaign has been waged throughout the Division which includes discontinued use of products potentially hazardous to the environment when safer alternative products are available. Within Tenth Marines, this issue specifically evolves around selection of an appropriate cleaning solvent which is bio-degradable, chemically safe for routine use, and economical. At present, our three basic choices for parts cleaning are dry cleaning solvent (also known as PD-680), use of Safety-Kleen contractual services, or Citrikleen.

2. BACKGROUND. Recent hazardous waste management inspections over the past year have uncovered problems with using unit treatment of waste PD-680. Only 4/10 Motor Transport was found to have been in compliance with handling regulations of solvent. However, problems emerged at the D/S Battalion Motor Pool (Bldg 1775) after the Base inspectors became suspicious when failing to locate waste containers for expended PD-680. From there, the inspectors proceeded to question a few of the mechanics on their use and disposition of expended PD-680. One of the mechanics indicated that since cleaning solvent use was so sparse, expended contents were merely disposed of into the oil waste separator. The inspector indicated that a sample now would have to be extracted from the separator and forwarded to a chemical lab for contamination testing. The testing alone is an expensive process (approximately \$800 to test one sample), and if contamination is detected, the overall cost for a professional cleanup will be beyond \$10,000.

3. ALTERNATIVES. Because of the vast magnitude of our maintenance-intensive environment, the requirement for sustained use of cleaning/degreasing agents will remain an integral factor in daily operations. We are afforded three product choices to carry out this requirement:

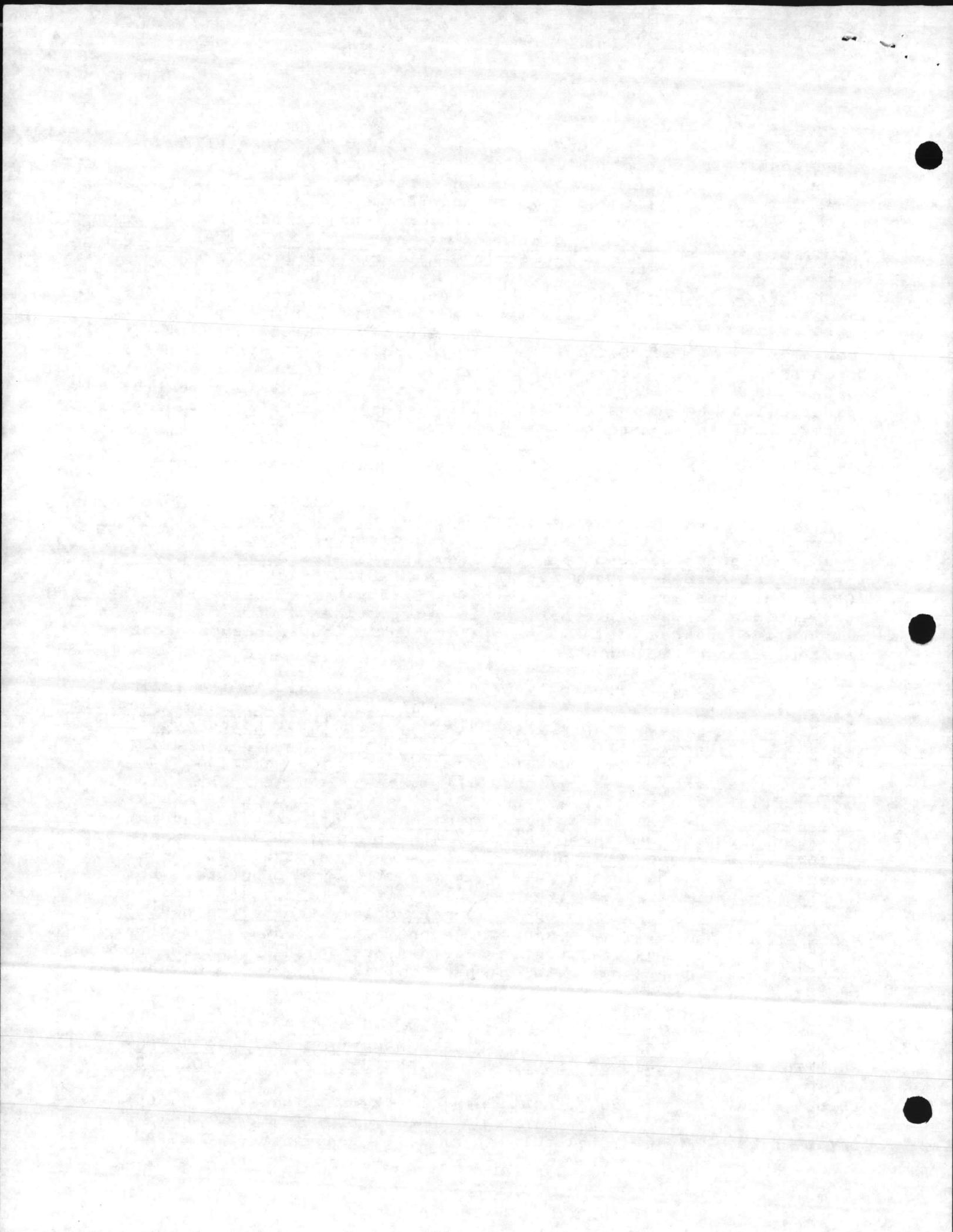


a. PD-680. Of all our units, only 5/10 and Regimental Engineer do not use this product which is chemically dangerous to the environment. With regard to our present users, a 'maintain status quo' approach on their part would place the Regiment in an untenable position primarily from an environmental compliance standpoint. Because of its harmful properties, continued use of PD-680 is not an acceptable alternative in our campaign for waste minimization.

b. Safety-Kleen Services. This service is presently provided to some 77 different maintenance sites aboard Camp Lejeune (primarily Base units). If our units were to be added to a Base contract presently in effect, Safety-Kleen would provide a garrison 20-Gallon Circulating Parts Cleaner with solvent which would be changed by the contractor on a monthly basis. The cleaning unit is electrically-operated (for recycling solvent from a storage compartment through a faucet), but the contractor uses a petroleum-based solvent (similar to PD-680) at a cost of approximately \$60.00 per month for one unit. While the only hazardous waste management control measures which would require implementation by the using unit are the posting of Emergency Spill Instruction warning signs and posting of updated Spill Contingency Plans by each storage tank, the using unit remains liable for its generated waste with no Statute of Limitations attached under the "cradle-to-grave" concept derived from the Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. In other words, a switchover to Safety-Kleen, while reducing some administrative paperwork, would not provide us with a viable alternative because of the potentially harmful environmental consequences which still loom.

c. Citrikleen. Presently 5/10 is the only unit in the Regiment using Citrikleen on a regular basis. This is a viable cleaning agent which does not require special handling and administration once it is expended because it is a bio-degradable, non-toxic, non-petroleum based product which precludes it from falling under hazardous waste criteria (see enclosures (2) and (3)). When no longer useable (usually after three to four months of use in a parts cleaner tank), Citrikleen is merely discarded as a bio-degradable agent into motor pool/gun park oil waste separators since it does not pose a threat to human health or the environment. On the surface, the cost for Citrikleen appears to be much higher than the other two products. But one of the key properties of Citrikleen is that it is concentrated, and can be used on a 4-part on up to 20-part cold water to one part Citrikleen mixture ratio. To show the economical advantages of Citrikleen, the following analysis is provided (using the strongest form of solution, four parts water to one part Citrikleen, as the compared product):

<u>SOLUTION</u>	<u>COST/ UNIT OF ISSUE</u>	<u>AVER. MONTHLY CONSUMPTION (ONE USER)</u>	<u>TOTAL ANNUAL COST FOR (ONE USER)</u>
PD-680	\$50/30 gl container	2 containers*	\$1200*
Safety-Kleen	\$60/20 gl solvent w/ service	1 container*	\$720*



Citrikleen

~~\$511.40~~
\$600/55 gl drum

\$64
8 gl (~~\$25~~)*

96 gl
(~~\$200~~)*
\$893.⁰⁰

* In the case of 5/10, all usage figures would double because of their magnitude of operations.

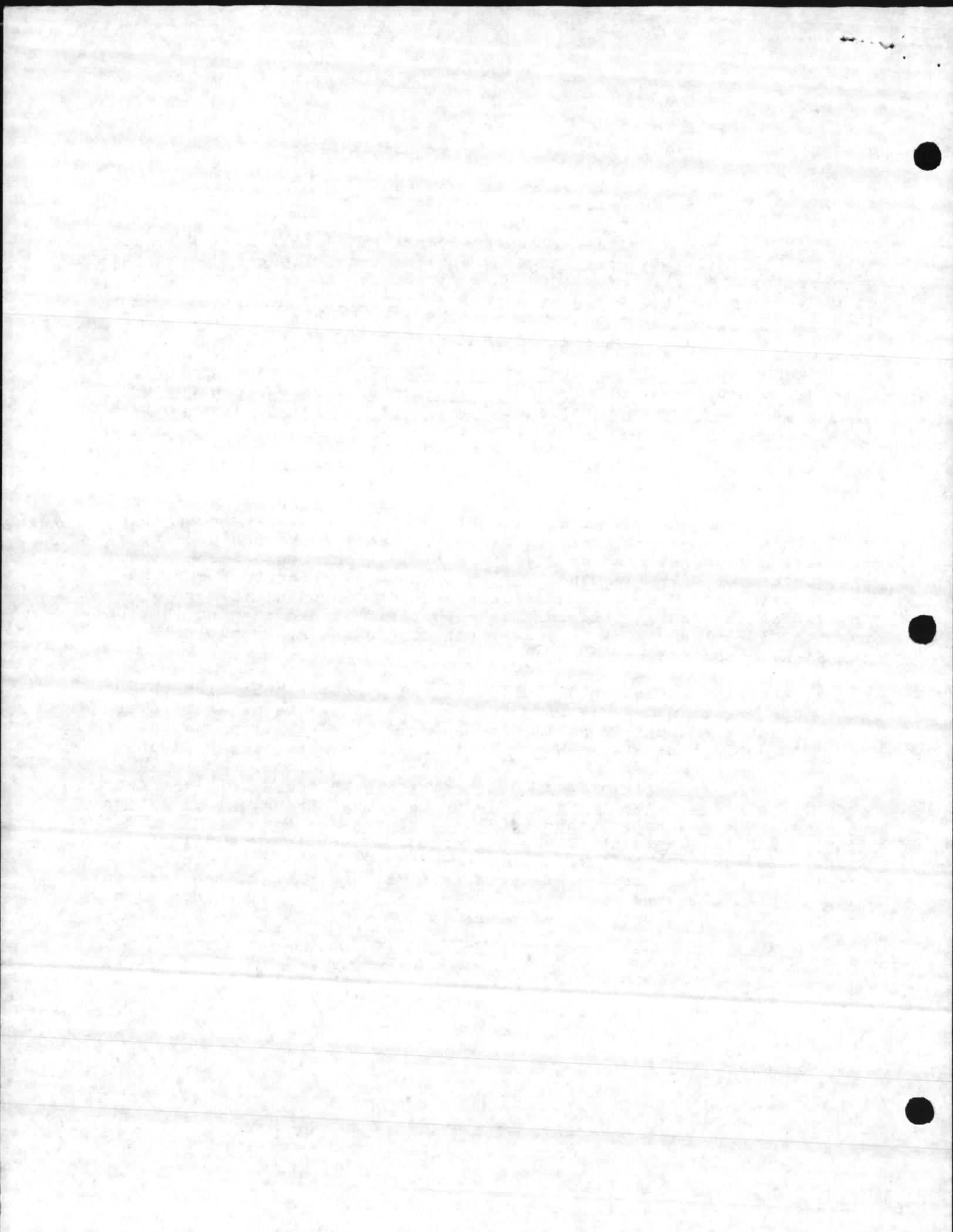
The reliability of the safety and environmental data listed in enclosures (2) and (3) was reaffirmed by environmental experts during references (b) and (c). If placed under tight control and used judiciously, I am of the opinion that Citrikleen is the best alternative in providing our maintenance personnel with a viable cleaning agent that is both environmentally safe and cost efficient.

4. CONCLUSION AND RECOMMENDED COURSES OF ACTION. I feel that with respect to environmental, economic, and personal safety considerations, it is in the best interest for all of our maintenance activities to convert over to Citrikleen for use in both garrison and field environments. The initial cost (~~\$600~~ for one 55 gl drum), while being somewhat steep, can easily be compensated for once unit Supply Officer's initiate action for increased funding through the FY-88 Mid-Year Review and FY-89 Budget Analysis processes. The Division Comptroller has indicated that additional funding is usually accessible for special purchases involving material used for the enhancement of personal safety and hazardous waste minimization. Furthermore, the contractor for Citrikleen has agreed to provide demonstrations and information briefs concerning viable methods for using this product. In view of the facts cited in this report, it is recommended that we use the Citrikleen issue to push forth our "waste minimization" campaign in the following manner:

a. Publish a Regimental Bulletin that strictly prohibits the use of PD-680 or other dry cleaning solvents which become classified as hazardous waste once expended. At the same time, amplify the use of bio-degradable products such as Citrikleen as viable alternatives.

b. That the Regimental HMDO coordinate with the Citrikleen contractor representative to Camp Lejeune, Mr. Chris Hensley, to set up an on-site demonstration involving all maintenance commodity managers from within the Regiment to observe practical application principals which allow for the judicious employment of Citrikleen in cleansing vital tool and part components necessary for our units to sustain satisfactory maintenance operations while remaining in compliance with the standards set forth in reference (a).

J.F. Higgins
J. F. HIGGINS





UNITED STATES MARINE CORPS
10th Marines, 2d Marine Division, FMF
Camp Lejeune, North Carolina 28542-5515

IN REPLY REFER TO
5100
S-4
13 Nov 87

From: Commanding Officer, 10th Marines
To: Commanding General, 2d Marine Division, FMFLant (AC/S G-4,
Div HMDO/SafetyO)

Subj: REQUEST FOR NAVOSH DEFICIENCY ABATEMENT PROGRAM FUNDING TO
OBTAIN CRITICAL APPARTUS FOR USE WITH AN ENVIRONMENTALLY SAFE,
BIODEGRADABLE DECREASING AGENT (CITRIKLEEN)

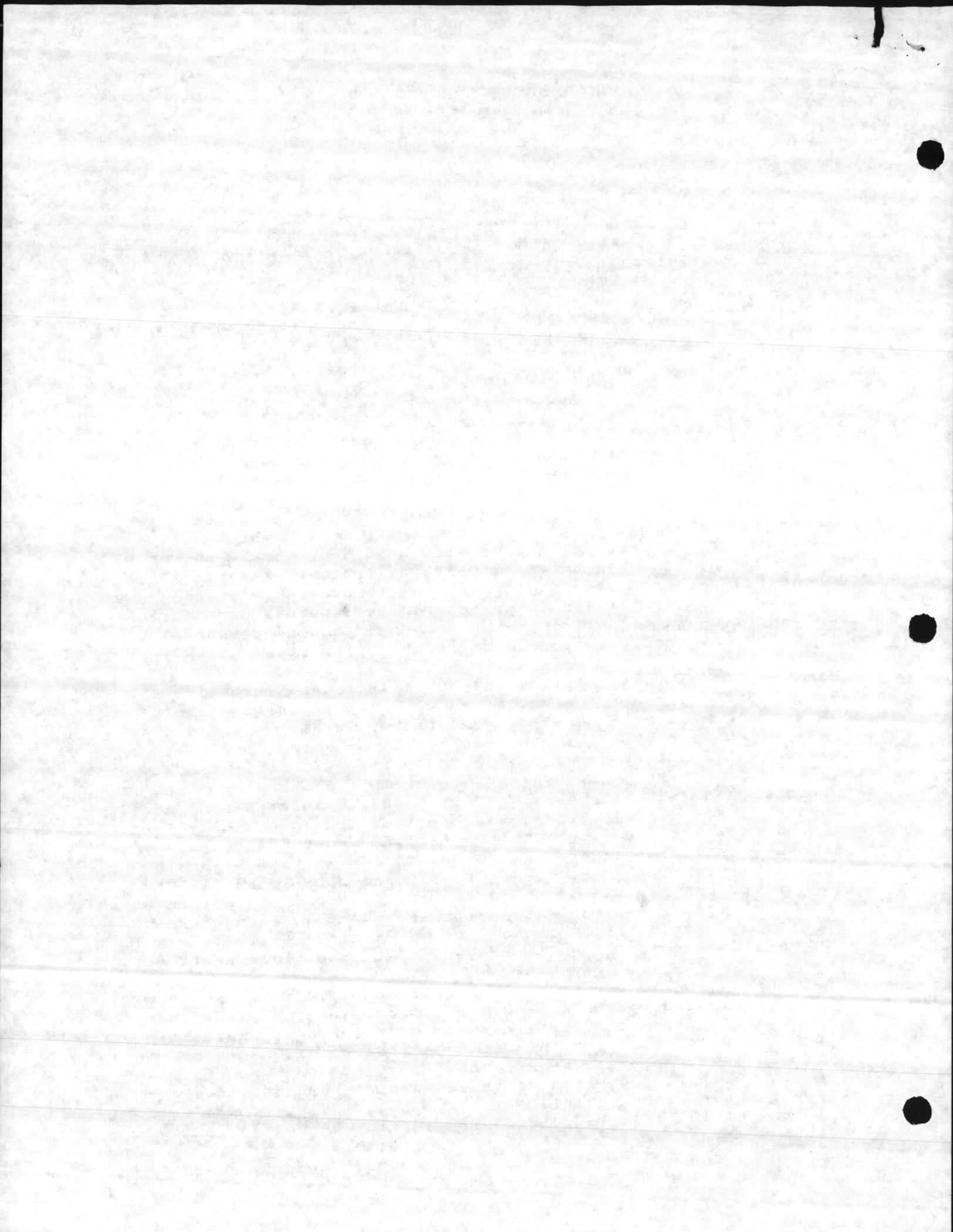
Ref: (a) CMC Washington DC 210116Z Oct 86
(b) MCO 5100.8E

Encl: (1) Citrikleen Material Safety Data Sheet and Toxicity Report
(2) Hazardous Item Data Sheet for Dry Cleaning Solvent
(3) Copies of Penetone Corp. Product Specification Sheets

1. In a major effort to comply with EPA and OSHA regulations, we are waging a "hazardous waste minimization" campaign which includes discontinued use of products potentially hazardous to the environment and our Marines when safer alternative products are available. After careful research and thorough review of available options, we have decided that Citrikleen (manufactured by Penetone Corporation) is the best cleaning agent for use by our maintenance personnel because of its chemically safe, bio-degradable properties.

2. Because of the vast magnitude of our maintenance-intensive environment, the requirement for sustained use of cleaning/degreasing agents has and will remain an integral factor in daily operations. We presently have one unit in the Regiment which uses Citrikleen on a regular basis, and they are extremely satisfied with this product. Not only is it a viable cleaning agent, but Citrikleen is unique in that it does not require special handling and administration once it is expended since it is a bio-degradable, non-toxic, non-petroleum based product which precludes it from falling under EPA hazardous waste management criteria (see enclosure (1)). We have begun to terminate the use of all dry cleaning solvents such as PD-680 and Stoddard solutions because of their harmful chemical properties which pose a threat to the environment and human safety (see enclosure (2)). Within a month, every one of our maintenance activities will have converted over to using Citrikleen in their daily operations.

3. With the conversion to Citrikleen nearly complete, we are now seeking special products which would allow for the judicious and economical application of Citrikleen during cleaning operations. Enclosure (3) contains a listing of three critical items which would enhance maintenance operations and the safety of our personnel working with Citrikleen. Each of these products are designed exclusively for use with Citrikleen (i.e. special adaptors are used for hookup with Citrikleen drum containers, specially-treated aluminum and rubber components are used to prevent deterioration, etc.). The below list contains a breakdown of products required for specific maintenance sections within the Regiment:



	<u>FOAM MASTER</u> <u>865</u>	<u>CHEM. LIQUID</u> <u>PROPORTIONER</u> <u>208</u>	<u>SPRAYER</u> <u>191</u>
HQBtry MT	1	1	1
TABtry MT	1	1	1
Regt Engr	1	1	1
1/10 MT	1	1	1
2/10 MT	1	1	1
3/10 MT	1	1	1
4/10 MT	1	1	1
5/10 MT/TVM	2	2	2

Current price range: Foam Master 865 - \$215.95; Chemical Liquid Proportioner 208 - \$139.95; Sprayer 191 - \$149.50

4. Because reference (a) has imposed several new restrictions on a FMF using unit's ability to conduct local purchases for equipment used in support of assigned operational missions, it is requested that the items listed in paragraph 3 be procured with NAVOSH Deficiency Abatement Program funding per guidance provided in reference (b). Assistance on this matter is appreciated. The Tenth Mar POC on this matter is Capt Higgins (ext. 3467/3933)

J. C. FLYNN
By direction

Copy to:
Unit HMDO's
Unit SupO's
HW Fac OIC's

