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| **State of Hawaii, Department of Health, Clean Water Branch** |
| **NPDES Form H** |
| **Application for HAR, Chapter 11-55 - NPDES Individual Permit Authorizing Discharges of Treated Process Wastewater Associated with Petroleum Product Bulk Terminal Facilities** |



**All sections of this form MUST be completed for National Pollutant Discharge Elimination System (NPDES) Permit compliance.**

***H.1 – General Information***

*You are required to fulfill all requirements and check the box below. If you do not check the box, your application will be considered incomplete, and the CWB may deny your request for NPDES permit coverage with prejudice.*

[ ]  I certify that:

* I will design, implement, operate, and maintain a Treatment System Operations Plan to ensure that my petroleum product bulk terminal effluent discharges will not violate HAR, Chapter 11-54; HAR, Chapter 11-55; and HAR, Chapter 11-55, Appendix H.
* My Treatment System Operations Plan shall adequately address the minimum items in Attachment D of this form and contain appropriate measures to address Section 303(d) pollutants of concern for my receiving State water.
* Prior to any discharge of dewatering effluent, I will provide treatment to remove all pollutants of concern identified in Sections H.6, H.7, H.8, and H.9.

***H.2 –Petroleum Product Bulk Terminal Effluent Discharge Information***

a. Business Activity

 Provide a brief description of the nature of business conducted at the facility (i.e., diesel wholesaler, petroleum products retailer, etc.

b. Operations Contributing to the Discharge

List all of the operations contributing to the discharge and the average flow of treated process wastewater effluent contributed by each operation. Indicate the worst-case scenario for the contaminated storm water runoff quantity.

|  |  |  |
| --- | --- | --- |
| Operations Contributing to the Process Wastewater Effluent | Average Flow of Process Wastewater (cfs/gpd) | Average Flow of Storm Water Runoff (cfs/gpd) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

c. Rates of Treated Process Wastewater Effluent Discharge from Discharge Point(s)

Indicate the discharge point and its average, maximum, and total daily flow rates of the treated process wastewater effluent discharge.

|  |  |  |  |
| --- | --- | --- | --- |
| Discharge Point ID# | Average daily flow rates (cfs/gpd) | Maximum daily flow rates (cfs/gpd) | Total Quantity of Discharge (cfs/gpd) |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

d. The Treatment Received by the Process Wastewater Effluent.

Indicate the treatment to be received by the treated process wastewater effluent which is based on the quantity and rate of discharge from the facility.

*e. Period of Non-Storm Water Discharge (Check the appropriate box(es)).*

*Indicate how often the discharge into receiving State waters will occur, as applicable.*

[ ]  *Continuous. “Continuous discharge” means a discharge which occurs without interruption throughout the operating hours of the facility, except for infrequent shut-downs for maintenance, process changes, or other similar activities.*

[ ]  *Emergency.*

[ ]  *Daily.*

[ ]  *Intermittent. “Intermittent discharge” means a discharge that is not continuous.*

[ ]  *Seasonal.*

[ ]  *Occasional.*

***H.3 –Maps***

*Attach, title, and identify all maps (pdf - minimum 300 dpi) listed below, in Attachment A. Please reference which maps account for the features listed below.*

1. *Island on which the activity is located.*
2. *Location(s) of the proposed dewatering activity.*
3. *Topographic map or maps which clearly show the legal boundaries of the activity; location of all existing and/or proposed outfalls or discharge points; and receiving State water(s) and receiving storm water drainage system(s), if applicable, identified and labeled.*

***H.4 – Flow Chart or Line Drawing***

*Attach or insert in Attachment A, a flow chart showing the following (Check each item, as applicable):*

[ ]  a. General route taken by the effluent (wastewater and/or contaminated storm water) through the facility from intake to the discharge point.

[ ]  b. Treatment systems or erosion controls that will be utilized (i.e., oil-water separator, granular-activated carbon process, air-stripping process, etc.).

[ ]  c. Estimated quantity of flow contributed by each source (i.e., tank water draw or contaminated storm water) to the receiving State water.

[ ]  d. Drainage system(s) receiving effluent, as applicable (e.g., City and County of Honolulu Municipal Separate Storm Sewer System (MS4), etc.).

[ ]  e. State water name(s) receiving effluent.

Indicate which item(s) are not identified and explain why the item(s) are not identified.

***H.5 - Existing or Pending Permits, Licenses, or Approvals***

*Place a check next to all applicable Federal, State, or County permits, Licenses, or approvals for the project and specify the permit number.*

[ ]  *Other NPDES Permit or NGPC File No.:*

[ ]  *Department of the Army Permit (Section 404):*

*If your project requires work in, above, under or adjacent to State waters, please contact the Army Corps of Engineers (COE) Regulatory Branch at (808) 438-9258 regarding their permitting requirements. Provide a copy of the COE permitting jurisdictional determination (JD) or the JD with COE Person’s Name, Phone Number, and Date Contacted.*

[ ]  *Facility on SARA 313 List (identify SARA 313 chemicals on project site:*

[ ]  *RCRA Permit (Hazardous Wastes):*

[ ]  *Section 401 Water Quality Certification:*

[ ]  *Other (Specify):*

***H.6 – North American Industrial Classification System (NAICS) United States Structure Codes***

*Complete the table below by providing all applicable North American Industrial Classification System (NAICS) United States Structure Codes and U.S. Standard Industrial Classification (SIC) Codes for your facility. See* [*http://www.census.gov/eos/www/naics/*](http://www.census.gov/eos/www/naics/) *to determine the NAICS code(s) and descriptions for your facility. See* [*http://www.census.gov/eos/www/naics/concordances/concordances.html*](http://www.census.gov/eos/www/naics/concordances/concordances.html) *to determine the corresponding SIC Code(s).*

| ***NAICS Code(s)*** | ***NAICS Code Description*** | ***Corresponding SIC Code(s)*** | ***SIC Code Description*** |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

***Add rows as needed.***

***H.7 – Physical Effluent Water Quality***

*a. Place an “x” in either the “Believe Present” column or the “Believe Absent” column based on the test results or your best estimate.*

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Believe Present* | *Believe Absent* |
| *Floating Debris* |  |  |
| *Scum or Foam* |  |  |
| *Color* |  |  |
| *Odor* |  |  |

*List the Discharge Point(s) that you identified in Section 6 of the e-Permitting CWB Individual NPDES Form that apply to this table.*

 *Please ensure that all Discharge Points are accounted for. If you leave this item blank, we will assume that this table applies to all Discharge Points. If needed, you may copy, paste, and complete this table for each Discharge Point with different test results.*

*b. Provide an explanation for the parameters believed to be present in the discharge.*

***H.8 – Water Quality Parameters***

*a. You are required to fulfill all requirements and check the box below. If you do not check box, your application will be considered incomplete, and the CWB may deny your request for NPDES permit coverage with prejudice.*

[ ]  *I certify that:*

* *I tested all of the parameters in the Table H.8 below, and a copy of the laboratory data sheets with Quality Assurance/Quality Control and Chain of Custody documents is included in Attachment B. I am reporting the results of my test in Table H.8 below.*
* *I have included a description of my sample collection technique in Attachment B.*
* *All test results were obtained from a representative sample as defined in HAR, Chapter 11-55, Appendix A, Section 14(a). Note: The burden of proving that sampling or monitoring is representative is on the Permittee.*
* *The test methods that I utilized were promulgated in 40 CFR Part 136 and, when applicable, listed in the references of chemical methodology for seawater analyses (see HAR, Chapter 11-54, Section 10(b)). Note: If a test method has not been promulgated for a particular parameter, you may apply for approval of an alternate test procedure by following 40 CFR Section 136.4.*
* *The test methods that I utilized have detection limits below and closest to the numerical limit specified in HAR, Chapter 11-54. For situations where the numerical limitation is below the detection limit of the test methods, I used the test method which has the detection limit closest to the numerical limitation.*

*b. Complete Table H.8 below. The test results shall be reported to the nearest decimal place or whole number as shown in the parentheses following each parameter. For example, "Temperature (0.1 °C)" -Temperature shall be reported to the nearest tenth of a centigrade and "Ammonia Nitrogen (1 µg/l)" - Ammonia Nitrogen shall be reported to the nearest whole microgram per liter. One test result may be reported for Salinity, Chloride, or Conductivity. If the test result is not detectable, indicate that the test result is "N.D." or "not detected."*

***Table H.8***

| *Parameter* | *Test Result* | *Units* |
| --- | --- | --- |
| *Total Nitrogen (10 µg/l)* |  | *µg/l* |
| *Ammonia Nitrogen (1 µg/l)* |  | *µg/l* |
| *Nitrate + Nitrite (1 µg/l)* |  | *µg/l* |
| *Total Phosphorus (10 µg/l)* |  | *µg/l* |
| *Turbidity (0.1 NTU)* |  | *NTU* |
| *Total Suspended Solids (1 mg/l)* |  | *mg/l* |
| *pH (0.1 standard units)* |  | *standard units* |
| *Dissolved Oxygen (0.1 mg/l)* |  | *mg/l* |
| *Oxygen Saturation (1%)* |  | *%* |
| *Temperature (0.1 oC)* |  | *oC* |
| *Salinity (0.1 ppt)* |  | *ppt* |
|  *or Chloride (0.1 mg/l)\** |  | *mg/l* |
|  *or Conductivity (1 µmhos/cm)\** |  | *µmhos/cm* |
| *Oil and Grease (1 mg/l)* |  | *mg/l* |

*\* Fresh waters and effluent samples*

*List the Discharge Point(s) that you identified in Section 6 of the e-Permitting CWB Individual NPDES Form that apply to Table H.8.*

 *Please ensure that all Discharge Points are accounted for. If you leave this item blank, we will assume Table H.8 applies to all Discharge Points. If needed, you may copy, paste, and complete Table H.8 for each Discharge Point with different test results.*

***H.9 – Toxic Parameters***

*a. You are required to fulfill all requirements and check the box below. If you do not check the box, your application will be considered incomplete, and the CWB may deny your request for NPDES permit coverage with prejudice.*

[ ]  *I certify that:*

* *I tested and I am reporting (in micrograms per liter) all of the parameters which are believed to be present in the construction dewatering effluent in Tables H.9.a to H.9.h below. Note: Everything identified in H.6.g. and H.6.h. shall be included.*
* *For all test results that were not detectable, I indicated "N.D." or "not detected" in the “Test Result” column of Tables H.9.a to H.9.h.*
* *For all parameters not believed to be present, I indicated "N/A" for "not applicable" in the "Test Result" column of Tables H.9.a to H.9.h.*
* *If the “Test Result” columns of Tables H.9.a to H.9.h are left blank, the CWB will consider these parameters to be present. The NPDES permit will require all of these parameters to be monitored.*
* *A copy of the laboratory data sheets with Quality Assurance/Quality Control and Chain of Custody documents, are included in Attachment B.*
* *All test results were obtained from a representative sample as defined in HAR, Chapter 11-55, Appendix A, Section 14(a). Note: The burden of proving that sampling or monitoring is representative is on the Permittee.*
* *The test methods that I utilized were promulgated in 40 CFR Part 136 and, when applicable, listed in the references of chemical methodology for seawater analyses (see HAR, Chapter 11-54, Section 10(b)). Note: If a test method has not been promulgated for a particular parameter, you may apply for approval of an alternate test procedure by following 40 CFR Section 136.4.*
* *The test methods that I utilized have detection limits below and closest to the numerical limit specified in HAR, Chapter 11-54. For situations where the numerical limitation is below the detection limit of the test methods, I used the test method which has the detection limit closest to the numerical limitation.*

*b. Complete Tables H.9.a to H.9.h below. The parameters are categorized into Metals, Organonitrogen Compounds, Pesticides, Phenols, Phthalates, Polynuclear Aromatic Hydrocarbons, Volatile Organics, and Others and are listed alphabetically. A Glossary of Chemicals is listed in Attachment C.*

*List the Discharge Point(s) that you identified in Section 6 of the e-Permitting CWB Individual NPDES Form that apply to Tables H.9.a to H.9.h.*

*Please ensure that all Discharge Points are accounted for. If you leave this item blank, we will assume Tables H.9.a to H.9.h applies to all Discharge Points. If needed, you may copy, paste, and complete Tables H.9.a to H.9.h for each Discharge Point with different test results.*

***Table H.9.a - Metals***

| *Total Recoverable Metal Parameter* | *Test Result* | *Units* |
| --- | --- | --- |
| *Aluminum* |  | *μg/l* |
| *Antimony* |  | *μg/l* |
| *Arsenic* |  | *μg/l* |
| *Beryllium* |  | *μg/l* |
| *Cadmium* |  | *μg/l* |
| *Chromium (VI)* |  | *μg/l* |
| *Copper* |  | *μg/l* |
| *Lead* |  | *μg/l* |
| *Mercury* |  | *μg/l* |
| *Nickel* |  | *μg/l* |
| *Selenium* |  | *μg/l* |
| *Silver* |  | *μg/l* |
| *Thallium* |  | *μg/l* |
| *Tributyltin* |  | *μg/l* |
| *Zinc* |  | *μg/l* |

***Table H.9.b. - Organonitrogen Compounds***

| *Organonitrogen Compound Parameter* | *Test Result* | *Units* |
| --- | --- | --- |
| *Benzidine* |  | *μg/l* |
| *2,4-Dinitro-o-cresol* |  | *μg/l* |
| *Dinitrotoluenes* |  | *μg/l* |
| *1,2-Diphenylhydrazine* |  | *μg/l* |
| *Nitrobenzene* |  | *μg/l* |
| *Nitrosamines* |  | *μg/l* |
| *N-Nitrosodibutylamine* |  | *μg/l* |
| *N-Nitrosodiethylamine* |  | *μg/l* |
| *N-Nitrosodimethylamine* |  | *μg/l* |
| *N-Nitrosodiphenylamine* |  | *μg/l* |
| *N-Nitrosopyrrolidine* |  | *μg/l* |

 ***Table H.9.c. - Pesticides***

| *Pesticide Parameter* | *Test Result* | *Units* |
| --- | --- | --- |
| *Aldrin* |  | *μg/l* |
| *Chlordane* |  | *μg/l* |
| *Chlorpyrifos* |  | *μg/l* |
| *DDT* |  | *μg/l* |
| *Demeton* |  | *μg/l* |
| *Dieldrin* |  | *μg/l* |
| *Endosulfan* |  | *μg/l* |
| *Endrin* |  | *μg/l* |
| *Guthion* |  | *μg/l* |
| *Heptachlor* |  | *μg/l* |
| *Lindane* |  | *μg/l* |
| *Malathion* |  | *μg/l* |
| *Methoxychlor* |  | *μg/l* |
| *Mirex* |  | *μg/l* |
| *Parathion* |  | *μg/l* |
| *TDE - metabolite of DDT* |  | *μg/l* |
| *Toxaphene* |  | *μg/l* |

***Table H.9.d. - Phenols***

| *Phenol Parameter* | *Test Result* | *Units* |
| --- | --- | --- |
| *2-Chlorophenol* |  | *μg/l* |
| *2,4-Dichlorophenol* |  | *μg/l* |
| *2,4-Dimethylphenol* |  | *μg/l* |
| *Nitrophenols* |  | *μg/l* |
| *Pentachlorophenol* |  | *μg/l* |
| *Phenol* |  | *μg/l* |
| *2,3,5,6-Tetrachlorophenol* |  | *μg/l* |
| *2,4,6-Trichlorophenol* |  | *μg/l* |

 ***Table H.9.e. - Phthalates***

| *Phthalate Parameter* | *Test Result* | *Units* |
| --- | --- | --- |
| *Bis (2-ethylhexyl) phthalate* |  | *μg/l* |
| *Dibutyl phthalate (esters)* |  | *μg/l* |
| *Diethyl phthalate (esters)* |  | *μg/l* |
| *Dimethyl phthalate (esters)* |  | *μg/l* |

 ***Table H.9.f. - Polynuclear Aromatic Hydrocarbons***

| *Polynuclear Aromatic Hydrocarbon Parameter* | *Test Result* | *Units* |
| --- | --- | --- |
| *Acenaphthene* |  | *μg/l* |
| *Fluoranthene* |  | *μg/l* |
| *Naphthalene* |  | *μg/l* |
| *Polynuclear aromatic hydrocarbons* |  | *μg/l* |

***Table H.9.g. - Volatile Organics***

| *Volatile Organic Parameter* | *Test Result* | *Units* |
| --- | --- | --- |
| *Acrolein* |  | *μg/l* |
| *Acrylonitrile* |  | *μg/l* |
| *Benzene* |  | *μg/l* |
| *Carbon tetrachloride* |  | *μg/l* |
| *Bis(2-chloroethyl)ether* |  | *μg/l* |
| *Bis(chloroethers-methyl)* |  | *μg/l* |
| *Bis(chloroisopropyl)ether* |  | *μg/l* |
| *Chloroform* |  | *μg/l* |
| *Dichlorobenzenes* |  | *μg/l* |
| *Dichlorobenzidine* |  | *μg/l* |
| *1,2-Dichloroethane* |  | *μg/l* |
| *1,1-Dichloroethylene* |  | *μg/l* |
| *Dichloropropanes* |  | *μg/l* |
| *1,3-Dichloropropene* |  | *μg/l* |
| *Ethylbenzene* |  | *μg/l* |
| *Hexachlorobenzene* |  | *μg/l* |
| *Hexachlorobutadiene* |  | *μg/l* |
| *Hexachlorocyclohexane, alpha* |  | *μg/l* |
| *Hexachlorocyclohexane, beta* |  | *μg/l* |
| *Hexachlorocyclohexane, technical* |  | *μg/l* |
| *Hexachlorocyclopentadiene* |  | *μg/l* |
| *Hexachloroethane* |  | *μg/l* |
| *Isophorone* |  | *μg/l* |
| *Pentachlorobenzene* |  | *μg/l* |
| *Pentachloroethanes* |  | *μg/l* |
| *1,2,4,5-Tetrachlorobenzene* |  | *μg/l* |
| *1,1,2,2-Tetrachloroethane* |  | *μg/l* |
| *Tetrachloroethanes* |  | *μg/l* |
| *Tetrachloroethylene* |  | *μg/l* |
| *Toluene* |  | *μg/l* |
| *1,1,1-Trichloroethane* |  | *μg/l* |
| *1,1,2-Trichloroethane* |  | *μg/l* |
| *Trichloroethylene* |  | *μg/l* |
| *Vinyl chloride* |  | *μg/l* |

***Table H.9.h. - Others***

| *Other Parameter* | *Test Result* | *Units* |
| --- | --- | --- |
| *Chlorine* |  | *μg/l* |
| *Cyanide* |  | *μg/l* |
| *Dioxin* |  | *μg/l* |
| *Polychlorinated biphenyls* |  | *μg/l* |

***H.10 – Treatment System Operations Plan***

**You are responsible for the design, implementation, operation, and maintenance of the**

**Treatment System Operations Plan to ensure that discharges of treated process wastewater associated with Petroleum Product Bulk Terminal Facilities will not cause or contribute to a violation of HAR, Chapter 11-54, Chapter 11-55, and Chapter 11-55 Appendix H.**

*Treatment System Operations Plan*

1. *Treatment System to be Used*

1. *Details of the Treatment System Operations*

1. *Sampling Plan, including detailed schedule for sampling and analysis of the effluent.*

*This plan shall specify the treatment system to be used and a detailed description of the operation. It shall include a sampling plan and the schedule for the sampling and analysis of the effluent. The sampling plan shall include the following:*

*a. Sampling procedures;*

*b. Location of sampling;*

*c. Person responsible for sampling;*

*d. Flow estimation period;*

*e. Laboratory that will analyze samples;*

*f. Test methods and detection levels for each parameter;*

*g. Quality Assurance/Quality Control methods; and*

*h. Chain of custody of samples.*

*The treatment system operations plan shall be modified by the Permittee as required by the*

*Director.*

***H.11 – Additional Information***

*Include any other site-specific information pertaining to the project or activity in Attachment D. If nothing is included in Attachment D, the CWB will assume you do not want to include additional information.*

***Attachment A – Maps and Flow Chart (Sections H.3 and H.4)***

*MAPS AND FLOW CHART*

***Attachment B – QA/QC and Chain of Custody (Sections H.8 and H.9)***

*QA/QC AND CHAIN OF CUSTODY*

***Attachment C – Glossary of Chemicals (Section H.9)***

*This glossary is for general use and is not intended to be a complete or definitive reference. The*

*parameters are categorized into Metals, Organonitrogen Compounds, Pesticides, Phenols,*

*Phthalates, Polynuclear Aromatic Hydrocarbons, Volatile Organics, and Others and are listed*

*alphabetically.*

*The information was obtained primarily from Environmental Protection Agency (EPA) Ambient Water Quality Criteria documents which are referenced in EPA’s Quality Criteria for Water (EPA 440/5-86-001), updated May 1, 1987. Additional information was obtained from the EPA pamphlet “Suspended, Cancelled and Restricted Pesticides,” January 1985; The Condensed Chemical Dictionary, 10th Ed. (Van Nostrand Reinhold Co., Inc., New York, 1981); and The Farm Chemicals Handbook (Meister Publishing Company, Willoughby, OH, 1988).*

*Information on organotins was obtained from the International Organotin Symposium held at Halifax, Nova Scotia in September 1987 and published in Volume 4 of the Oceans '87 Proceedings, by the Marine Technology Society, Washington D.C., and IEEE Ocean Engineering Society, Piscataway, NJ.*

*a. Metals*

*Antimony - A metal used as a hardening alloy for lead, particularly in lead-acid batteries. Also used as a semiconductor and in pyrotechnics.*

*Arsenic - A metal used as an alloy with lead and copper in shot, batteries, and cables.*

*Arsenic trioxide is used as a pigment and as an insecticide, rodenticide, herbicide, sheep and cattle dip, hide preservative, and wood preservative. It was used as a pesticide in the production of canec panels in Hilo. Use in houses is restricted to concentrations below 1.5 percent. Carcinogen.*

*Beryllium - A metal for various high-technology uses including nuclear reactor moderator and structural material. Carcinogen.*

*Cadmium - A metal used in electroplating and coating, alloys, nickel-cadmium batteries, pigments, and in a variety of other industrial areas.*

*Chromium - A metal used in plating, alloys and in pigments. Hexavalent forms are most toxic and are used in cooling tower additives.*

*Copper - A metal used in wiring, plumbing, electroplating, alloys, insecticides, and in anti- fouling paints.*

*Lead - A metal used in batteries, gasoline additives, solder, and ammunition.*

*Mercury - A metal used in dentistry, electronics, instruments, lamps, metallurgy and formerly in anti-fouling paints.*

*Nickel - A metal used in alloys, electroplating, and batteries.*

*Selenium - A metalloid element used in electronics, rubber production, dandruff shampoo, and a trace element in animal feed.*

*Silver - A metal with various electronic, chemical, plating, photographic, and dental uses.*

*Thallium - A metal. Pesticide registration of thallium sulfate cancelled.*

*Tributyltin - Tributyltin is of environmental concern primarily because of its use in marine anti- fouling paints. This use has recently been restricted by Congress. Organotins have also been used in agriculture and residential areas to control fungi and insects including moths, houseflies, cockroaches, and mosquito larvae. The largest use is in stabilizing polyvinyl chloride polymers used in construction materials and food packaging.*

*Zinc - A metal used in alloys, electroplating, galvanizing, batteries, and cathodic protection.*

*b. Organonitrogen Compounds*

*Benzidine - Aromatic amine used in dye production. Carcinogen.*

*Dinitro-o-cresol - Pesticide, fungicide, insecticide and miticide. Also used as a blossom- thinning agent on fruit trees.*

*Dinitrotoluene - Commercial and military explosive.*

*Diphenylhydrazine - Used as a reagent for the sugars arabinose and lactose and for the production of phenylbutanone and benzidine.*

*Nitrobenzene - Used in the production of aniline dyes, rubber, medicinals, metal polish, shoe black, perfume, and as a combustion propellant and chemical reaction, and crystallizing solvent.*

*Nitrosamines - Only small quantities are synthesized for research and rubber and pesticide production. Primary environmental exposure is probably due to the nitrosation of amine*

*and amide precursors in reactions in air, soil, water, food, and animal systems. Carcinogen.*

*c. Pesticides*

*Aldrin - Insecticide used in ground injection for termite control and non-food plant dip.*

*Registration for other uses cancelled. Metabolizes to dieldrin. Carcinogen.*

*Chlordane - Insecticide used for termite control and non-food plant dip. Registration for other uses cancelled. Carcinogen.*

*Chlorpyrifos - Organophosphorus insecticide (a.k.a. Dursban, Lorsban). Used locally for termite control.*

*DDT - Persistent lipid-soluble chlorinated pesticide. Formerly most widely used. All pesticide uses cancelled except by government agencies and physicians. Metabolizes to DDE and TDE. Carcinogen.*

*Demeton - Systemic insecticide and acaricide applied as a foliage spray and soil drench.*

*Dieldrin - Persistent insecticide used in ground injection for termite control and as non-food plant dip. Registration for other uses cancelled. Carcinogen.*

*Endosulfan -Insecticide and acaricide (a.k.a. Thiodan). Used on pineapples in Hawaii.*

*Endrin - Pesticide, rodenticide, and avicide. Used on sugarcane to control the sugarcane beetle. Registration cancelled for control of the sugarcane borer. Teratogen.*

*Guthion - Organophosphorus pesticide used for many pests on various fruits, melons, nuts, vegetables, field crops, ornamental, and shade trees.*

*Heptachlor - Insecticide registered for termite control and non-food plant dip. Registration for other uses cancelled. Carcinogen.*

*Lindane - Broad spectrum insecticide used in livestock sprays, forestry, christmas trees, structural treatments, hardwood logs and lumber, dog sprays, dusts and dips, flea collars, moth sprays, seed treatments, shelf paper, and household sprays. Carcinogen.*

*Malathion - Organophosphorus insecticide used for many insects including: aphids, spider mites, scale insects, house flies, mosquitos, and for insects attacking fruits, vegetables, ornamental and stored products. Used in public health programs to control mosquitos.*

*Methoxychlor - Organochlorine pesticide.*

*Mirex - Organophosphorus insecticide. Registration cancelled 12/01/77. Mirex was used to control fire ants on pineapples in Hawaii.*

*Parathion - Organophosphorus pesticide used on fruit, nut, vegetable, and field crops. TDE - Metabolite of DDT. Carcinogen.*

*Toxaphene - 175 compounds of chlorinated camphene. Formerly the most heavily used pesticide. Registration cancelled in 1982 with exceptions for cattle, pineapples, and bananas. No U.S. production. Persistent in the environment. Carcinogen.*

*d. Phenols*

*Chlorinated Phenols - (Includes cholorinated cresols). Synthesis of dyes, pigments, resins, pesticides, herbicides and used directly as flea repellents, fungicides, wood preservatives, mold inhibitors, antiseptics, disinfectants, and anti-gumming agents in gasoline. Chlorinated phenol pesticide products include 2,4-D, 2,4-DCP, 2,4,5-T, 2,3,4,6-TCP, and PCP. Some forms carcinogenic.*

*2-Chlorophenol - Intermediate in chemical production of fungicides, slimicides, bactericides, antiseptics, disinfectants, and wood and glue preservatives. Can be produced in the chlorination of drinking water and sewage. May be biodegraded.*

*2,4-Dichlorophenol - Used in the production of herbicides (2,4-D) and in mothproofing, antiseptics, and seed disinfectants. Metabolic and photodegradation product of the above.*

*Nitrophenols - 2,4,6 trinitrophenol (picric acid) has been used as an explosive, dye intermediate, reagent, germicide, fungicide, staining agent and tissue fixative, and in photochemicals, pharmaceuticals, and metal etching. Mono and dinitrophenols would occur in the environment primarily from discharges from manufacturing plants or possibly from the degradation of pesticides. They are used in the production of dyes, photochemicals, pesticides, wood preservatives, explosives, and leather treatments. See also 2,4 dinitro-o-cresol.*

*Pentachlorophenol - Very common pesticide, fungicide, and bactericide (a.k.a. PCP).*

*Phenol - Used in production of epoxy and phenolic resins, pharmaceuticals, germicides,*

*fungicides, slimicides, herbicides, dyes and acids, and as a disinfectant and antiseptic.*

*e. Phthalates*

*Phthalate Esters - Plasticizers used especially in Polyvinyl chloride (PVC) production. Easily extractable and up to 60 percent of the total weight of plastic. Also used in the production of pesticide carriers, cosmetics, fragrances, munitions, industrial oils, and insect repellents.*

*f. Polynuclear Aromatic Hydrocarbons*

*Acenaphthene - Coal tar product used in the manufacturing of dyes and plastics and as an insecticide and fungicide. Also detected in cigarette smoke and gasoline exhaust.*

*Fluoranthene - A polynuclear aromatic hydrocarbon. Primarily a pyrolysis product formed in frying, smoking, incineration, etc. Natural as well as man-made sources. Carcinogen.*

*Naphthalene - Primary parameter of coal tar. Used in dye production, formulation of solvents, and chemical synthesis. Also used in lubricants and motor fuels, and as a moth repellant, insecticide, anthelminthic, vermicide, and intestinal antiseptic.*

*Polynuclear Aromatic Hydrocarbons - Diverse class of compounds formed by incomplete combustion of organics with insufficient oxygen. Examples include benzo[a]pyrene and benz[a]anthracene. Carcinogen.*

*g. Volatile Organics*

*Acrolein - Biocide for weed, algae, mollusk and slime control, and to protect liquid fuels from microorganisms. Also used in leather tanning, tissue fixation, paper, textiles, crease- proofing cotton, and as a chemical intermediate, plasticizer, copolymer in photography, builder in laundry and dishwashing detergents, and coating for aluminum and steel.*

*Acrylonitrile - Copolymer used in the production of fibers and plastics (e.g., ABS Acrylonitrile- Butadiene-Styrene plastic), and latexes and chemicals. Banned as a resin for soft drink containers and as a fumigant. Similar toxic effects as cyanide. Carcinogen.*

*Benzene - Coal tar and petroleum product used in pharmaceutical and chemical synthesis, including the production of styrene, detergents, pesticides, thinners, and inks. Also used as a cleaner and degreaser, solvent, and gasoline anti-knock additive. Carcinogen.*

*BHC - Benzene hexachloride. See hexachlorocyclohexane and lindane. Carcinogen.*

*Carbon Tetrachloride - Solvent and grain fumigant also used in fire extinguishers.*

*Carcinogen.*

*Chlorinated Benzenes - Solvents for fats, oils and greases, also used as fumigants, degreasers, lubricants, dielectrics, dye carriers, wood preservatives; in chemical, pesticide, and herbicide production; heat transfer; military pyrotechnics; and termite control. Carcinogen.*

*Chlorinated Ethanes - Used in the production of tetraethyl lead and vinyl chloride and as solvents and chemical intermediates. Some forms carcinogenic.*

*Chloroalkyl ethers - Used in organic synthesis, textiles, ion exchange resins, pesticides, and reaction solvents.*

*Chloroform - Chemical solvent. Formed in the chlorination of sewage and water supplies. Carcinogen.*

*Dichlorobenzenes - Used in air deodorants, insecticides, chemical production, dyes, herbicides, and degreasers.*

*Dichlorobenzidine - Used in the production of dyes and pigments and a curing agent for polyurethanes. Carcinogen.*

*Dichloroethylenes - Intermediate in chemical production, and polyvinylidene chloride copolymers in food packaging materials (e.g., plastic wrap) and tank coatings. Degradation products of larger chlorinated hydrocarbons. Carcinogen.*

*Dichloropropane - Soil fumigant for nematodes, oil and fat solvent, and degreaser. Dichloropropene - Soil fumigant for nematodes, used in Hawaii on pineapples. Also oil and fat solvent and degreaser.*

*Ethylbenzene - Up to 20 percent of gasoline. Widespread commercial use including production of styrene, diluents in paints, and used as insecticides.*

*Hexachlorobutadiene - Organic solvent used in chlorine production recovery, in rubber and lubricant production, and as a gyroscope fluid. Carcinogen.*

*Hexachlorocyclohexane - Broad spectrum insecticide (a.k.a. BHC). Only the gamma isomer, lindane, is currently registered and produced. Carcinogen.*

*Hexachlorocyclopentadiene - Base of several chlorinated pesticides including: aldrin, dieldrin, chlordane, heptachlor, endrin, isodrin, kepone, mirex, endosulfan, and pentac. Also used in the production of flame retardants.*

*Isophorone - Solvent for fats, oils, gums, natural and synthetic resins, cellulose derivatives, lacquers, pesticides and herbicides. Used in chemical and plant growth retardant production.*

*Tetrachloroethylene - Solvent in textile and dry cleaning, metal cleaning, and chemical production (a.k.a. perchloroethylene or PCE). Carcinogen.*

*Toluene - Aviation fuel and high-octane blending stock, chemical intermediate, thinner, solvent for paints, gums, resins, oils, rubber, and vinyl, and used in plastic cement, chemicals, explosives, and detergents.*

*Trichlorinated ethanes - Metal degreaser, chemical intermediate, adhesive and resin solvent, pesticide, dry cleaning solvent, formerly used as a fumigant 1,1,2 isomer carcinogenic.*

*Trichloroethylene - Degreasing solvent in metal industries. Formerly dry cleaning solvent and extractive solvent in foods (a.k.a. TCE). Carcinogen.*

*Vinyl chloride - Polymerized in the production of PVC, the most widely used material in the manufacture of plastics. All pesticide uses cancelled (whether an active or inert ingredient) for uses in the home, food handling establishments, hospitals, and enclosed areas. Degradation product of larger chlorinated hydrocarbons. Carcinogen.*

*h. Others*

*Chlorine - Chlorine is commonly used to disinfect wastewater and water supplies and to control fouling organisms in cooling water systems.*

*Cyanide - Used and formed in many industrial processes including steel, petroleum, plastics, synthetic fibers, metal plating, mining, and chemical industries.*

*Dioxin - Trace contaminant of chlorinated phenols, chlorinated phenoxy acids (especially the herbicide 2,4,5-T and Silvex), and hexachlorophene. Carcinogen.*

*Polychlorinated biphenyls (PCBs) - Used as a transformer and capacitor fluid. Also used as a heat transfer, hydraulic, compressor, and vacuum pump fluid, plasticizer, and in lubricants and wax extenders. No longer manufactured in the United States. All pesticide uses eliminated. Carcinogen.*

***Attachment D – Additional Information (Section H.11)***

*ADDITIONAL INFORMATION*