TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

IFF Chemical Holdings, Inc.
2051 North Lane Avenue
Jacksonville, Florida 32254

Jacksonville Site
Facility ID No. 0310071

PROJECT

Project No. 0310071-013-AC
Application for Minor Source Air Construction Permit
Iso-E & Iso-Gamma Fragrance Products

COUNTY

Duval, Florida

PERMITTING AUTHORITY

Department of Environmental Protection
Northeast District Office
Waste and Air Resource Management Program
8800 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256-7590
Telephone: 904/256-1700
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July 31, 2013

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

Facility Description and Location

IFF Chemical Holdings, Inc. is an existing non-SOCMI (Synthetic Organic Chemical Manufacturing Industry), which is categorized under Standard Industrial Classification Code No. 2869. The facility is located in Duval County at 2051 North Lane Avenue**,** Jacksonville, Duval County, Florida; UTM Coordinates: Zone 17, 427.7 km East and 3357.6 km North; Latitude: 30° 20’ 52” North and Longitude: 81° 45’ 07” West. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

Facility Regulatory Categories

- The facility **is not** a major source of hazardous air pollutants (HAP).
- The facility has no units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Project Description

To add the requirements of 40 CFR 63, JJJJJJ- National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, as well as Engines regulation 40 CFR 63, ZZZZ- National Emissions Standards for Hazardous Air pollutants for Stationary Reciprocating Internal Combustion Engines and to add two new fragrance products: Iso-E and Iso-Gramma that will be included on the Unregulated Emissions Unit List.

Processing Schedule

May 13, 2013 - Received the application for a minor source air pollution construction permit.

June 3, 2013- Requested additional information.

June 3, 2013- Received additional information.

June 12, 2013-Received additional information; application complete.

July 12, 2013- Received additional information.

2. PSD APPLICABILITY

General PSD Applicability

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM_{10}); volatile organic compounds (VOC); lead (Pb); fluorides (Fl); sulfuric acid mist (SAM); hydrogen sulfide (H_2S); total reduced sulfur (TRS), including H_2S; reduced sulfur compounds, including H_2S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO_2 and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 $\mu g/m^3$, 24-hour average.

If the potential emission exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

PSD Applicability for Project

To add the requirements of 40 CFR 63, JJJJJJ- National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, as well as Engines regulation 40 CFR 63, ZZZZ- National Emissions Standards for Hazardous Air pollutants for Stationary Reciprocating Internal Combustion Engines and to add two new fragrance products: Iso-E and Iso-Gramma that will included on the Unregulated Emissions Unit List.

As provided in the application, the following table summarizes potential emissions and PSD applicability for the project.

Table A. Potential Emissions (Tons/Year) and PSD Applicability

As shown in the above table, total project emissions will not exceed the PSD significant emissions rates; therefore, the project is not subject to PSD preconstruction review.

Pollutant	Baseline Emissions	Projected Actual Emissions	Projected Increases Emissions (TPY) (Projected-Baseline Actual)	Significant Emissions Rate (TPY)	Subject To PSD?
CO	25.2	25.8	0.606	100	No
NO_X	40.9	41.9	0.978	40	No
$PM/PM_{2.5}/PM_{10}$	9.12/9.08/9.08	9.39/9.35/9.35	0.268/0.266/ 0.266	25/15/10	No
SO_2	1,041.9	1,072.6	30.8	40	No
VOC	1.60	1.64	0.0390	40	No
SAM **(NOTE 1)**	159.5	164.2	4.71	7	No
Pb	2.01	2.07	0.0528	0.6	No
TRS	0.621	0.651	0.0302	10	No
N_2O	NA	NA	NA	NA	NA
CH_4	NA	NA	NA	NA	NA
CO_2	NA	NA	NA	NA	NA
GHG	46,419	47,750.1	1,330.6	75,000	No

(**NOTE 1**) Not reported in AORs - Consistent with the method for calculating the baseline emissions, the projected actual emissions are based on assuming 10% of SO2 converts to SO3, all of which converts to SAM.

Projected Actual Emissions, Boilers 1-3

Pollutant	Baseline Emissions [a] (TPY)	Baseline 2-Year Period	Maximum Emission Factors [b] (lb/MMBtu)	Projected Heat Input, Boilers 1-3[c] (MMBtu/yr)	Project Specific Emissions (TPY)	Total Projected Actual Emissions (TPY)
NOx	40.9	2010-2009	0.120	16,304	0.978	41.9
CO	25.2	2011-2010	0.0743	16,304	0.606	25.8
SO2	1,041.9	2010-2009	3.77	16,304	30.8	1,072.6
VOC	1.60	2011-2010	0.00479	16,304	0.0390	1.64
PM	9.12	2004-2003	0.0328	16,304	0.268	9.39
PM10	9.08	2004-2003	0.0327	16,304	0.266	9.35
PM2.5	9.08	2004-2003	0.0327	16,304	0.266	9.35
SAM [d]	159.5	2010-2009	0.578	16,304	4.71	164.2
Pb	2.01	2005-2004	0.00647	16,304	0.0528	2.07
TRS	0.621	2012-2011	0.00371	16,304	0.0302	0.651
N2O	NA	NA	0.000242	16,304	0.00198	NA
CH4	NA	NA	0.00242	16,304	0.0198	NA
CO2	NA	NA	163.1	16,304	1,329.6	NA
GHGs	46,419	2011-2010	NA	NA	1,330.6	47,750

[a] Based on AOR data for the period 2003 - 2012.
[b] Based on AOR data for the period 2003 - 2012.
[c] Projected heat demand for project based on maximum 2-year period average heat input and the projected steam demand of 16,308 decatherms per year as calculated by IFF.

Projected Heat Input = 16,308 decatherms/yr
16,304.1 MMBtu/yr
[d] Not reported in AORs - Consistent with the method for calculating the baselone emissions, the projected actual emissions are based on assuming 10% of SO2 converts to SO3, all of which converts to SAM.

The energy that is needed to raise this steam (Q) can be estimated:

Q = [(Mstm x Hstm) + (Mbd x Hbd) - (Mbfw x Hbfw)]/E

Where:

Mstm = steam rate = 15 mm #/year
Hstm = steam enthalpy = 1200 BTU/#
Mbd = boiler blowdown rate = 0.02 x Mstm = 0.3 mm#/year
Hbd = enthalpy of blowdown condensate = 380 BTU/#
Mbfw = boiler feedwater rate = Mstm + Mbd = 15.3 mm#/hr
Hbfw = boiler feedwater enthalpy = 150 BTU/#
E = boiler efficiency = 0.75 (assume)

Q = [(15 x 1200) + (0.3 x 150) - (15.3 x 380]/0.75
Q = 16,308 decatherms/year
16,304.1 MMBtu/yr.

3. APPLICATION REVIEW

Discussion of Emissions

The VOC projected actual emissions for this project is 1.64 TPY.

[Application No. 030071-013-AC and Additional Information received on 7/12/13]

Federal NSPS Provisions

40 CFR 60, Subpart added Engines regulation 40 CFR 63, ZZZZ- National Emissions Standards for Hazardous Air pollutants for Stationary Reciprocating Internal Combustion Engines.

Federal NESHAP Provisions

40 CFR 63, JJJJJJ- National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources.

Other Regulations

Boilers #1-3 are affected units and this permit is based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C. for several pollutants. Therefore, pursuant to Rule 62-212.300(1)(e), F.A.C., the permittee is subject to the following monitoring, reporting and recordkeeping provisions.

a. The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change. Emissions shall be computed in accordance with the provisions in Rule 62-210.370, F.A.C., which are provided in Appendix C of this permit.

b. The permittee shall report to the Department within 60 days after the end of each calendar year during the 5-year period setting out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:

   1) The name, address and telephone number of the owner or operator of the major stationary source;

   2) The annual emissions as calculated pursuant to the provisions of 62-210.370, F.A.C., which are provided in Appendix C of this permit;

   3) If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

   4) Any other information that the owner or operator wishes to include in the report.

c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

For this project, the Department requires the annual reporting of actual NO_x, CO, SO_2, VOC, $PM/PM_{2.5}/PM_{10}$, SAM, Pb, TRS and GHG emissions for the following units: Emissions Units 003 (Boiler No. 2), 017 (Boiler No. 1) and 037 (Boiler No. 3).

[Application 0310071-013-AC; and Rules 62-212.300(1)(e) and 62-210.370, F.A.C.]

Iso-E & Iso-Gamma Fragrance Products Project:

Since there are no unit specific requirement for this unit and the increased emissions are expected to be minimal, it will be included on the Unregulated Emissions Unit's list: Adding two new fragrance products: Iso-E and Iso-Gramma that will utilize one 8,000 gallon batch reactor tank (R-451); and one 9,000 gallon wash tank (V-452) utilized for both products; several raw material, intermediate, and one final product storage tank (all vented to the atmosphere). Additions to the Vapor Collection System Equipment: T-467, 25,000 gallon storage tank; T-466 Recirculated 3M3P, 15,000 gallon storage tank; and T-453 Crude Iso-Pre, 60,000 gallon storage tank. The vapors are collected from the process equipment and incinerated in two of the three boilers on site. VOC is the emitted pollutant from this new project. The batch reactor and wash tank will include vapor condensers as controls that will utilize chilled water or glycol for cooling. The following storage tanks will discharge directly to the atmosphere and not connect to the Vapor Collection (VCS): T-117, Myrcene 247,000 gallon storage tank (existing); T-455 Distilled Iso-Pre 100,000 gallon storage tank; T-456 Crude Iso-Pre 35,000 gallon storage tank; T-459 Iso-Par H 12,000 gallon storage tank; T-460 Crude Iso-E 75,000 gallon storage tank; T-462 Crude Iso-E/ Gamma QC 14,800 gallon tank; T-463 Iso-E/ Gamma 25,000 product tank; T-464 Iso-E/ Gamma 25,000 product tank; and T-504 Acetic Anhydride 10,000 gallon storage tank (existing).

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. Leslie Maybin is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the 8800 Baymeadows Way W., Suite 100, Jacksonville, Florida 32256-7590; Telephone: 904/256-1700.