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Technical Support Document
Title V Permit Renewal
Arizona Environmental Container Corporation
Permit #V20640.000

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1. BACKGROUND

1.1 Applicant/Application History

This is a permit renewal for a facility that manufactures fiberglass swimming pools and spas, which is owned and operated by Arizona Environmental Container Corporation ("AECC"), an Arizona corporation. The facility is located at 850 N. Davidson Boulevard, Eloy, Arizona, upon parcels also identified by Pinal County Assessor numbers 408-02-008G-8 and 408-02-026. The SIC Code is 3089.

This technical support document only summarizes any permitting actions up to this permit renewal. Additional information may be found in the Technical Support Documents for previous versions of this permit.

This analysis reflects consideration of (at least) the following:

- Renewal application received on 1/7/2010, signed by Kirk Sullivan, Owner/President.
- Comments from EPA Region IX, received on 4/23/10.

1.2 Attainment Classification

This facility is located in an area designated as "attainment" for all pollutants.

1.3 Permitting History

The following is a list of permits applied for and/or issued since this facility's initial permit.

Permit	Date Issued	Type	Description
V20612.000	3/23/2000	Title V	Initial Title V permit
V20612.R01	10/20/02	Significant Revision	Removes no longer applicable requirement: 40# rule
V20612.R02	1/20/05	Significant Revision	Incorporates applicable requirements of 40 CFR 63, Subpart WWWW
V20623.000	9/23/05	Renewal	Authorizes new building for mold construction/repair

1.4 Compliance/Enforcement History

Inspections are regularly conducted at this facility to ensure compliance with its applicable permit conditions. AECC is currently in compliance with the permit conditions cited in permit V20623.000. The facility is inspected every fiscal year and the following inspection will take place before July, 2010. The following table summarizes the recent inspections that have been conducted on the source in the last 5 years:

Inspection Date	Type of Inspection	Results
1/14/09	Annual compliance	In compliance

3/12/08	Annual compliance	In compliance
3/1/07	Annual compliance	In compliance
4/11/06	Annual compliance	In compliance
2/11/05	Annual compliance	In compliance

2. PROCESS DESCRIPTION

Arizona Environmental Container produces fiberglass swimming pools and spas, as well as similar products like aquaculture tanks, outdoor horse training water pools, cisterns, etc.... The facility consists of a main building with 8 bays for manufacturing fiberglass pools and spas using a lay-up process that incorporates applying glass fiber and resin using spray guns. An adjacent building contains 2 more bays for mold construction and repair.

In the manufacturing operation, a gel coat is applied to a waxed mold with a gel coat spray gun system. The spray gun system mixes the gel coat with a catalyst as the material is applied. The gel coat typically contains a of mixture styrene and methylmethacrylate ("MMA"). This gel coat surface will become the pool surface. A fiberglass mat is manually applied by hand over the gel coated mold surface, and resin is applied to the fiber glass mat with a resin spray gun system.

Due to the operating environment for the permittee's products, the resin utilized qualifies as "corrosion resistant." While corrosion resistant resin offers superior longevity when exposed to sunlight and the various chemicals utilized in a swimming pool environment, corrosion resistant resin also produces relatively higher emissions of styrene than do other resins.

After sufficient layers of resin coated mat are applied to the mold, hand rollers are used to force the resin into the mat, eliminating air bubbles and dry spots and tightly laminating the composite structure. Additional layers of resin coated mat are applied as needed to achieve the required thickness, determined by the structural requirements for a specific pool. The resin infused material is allowed to polymerize and harden. Miscellaneous styrene-containing putties and fillers may be used to touch up the pool either in the laminating area or during final assembly.

After the final coat or resin has formed a hardened coat, the mold and pool assembly is moved outside to complete the curing process.

When fully solidified, compressed air is fed between the pool and the mold to remove the pool from the mold. The mold may require minor cleaning or repair ("mold care") and a mold release agent is applied to facilitate removal of the next built-up part from the mold. The pool edges are trimmed by hand powered tools equipped with collectors; the trimmed material is discarded. The trimming operation results in large fragments and particles too large to become airborne and result in fugitive emissions. Grinding of surface imperfections will be performed by hand tools equipped with vacuum-bag collectors. Smaller particulates generated both inside and outside the building will be controlled by the vacuum bag collectors in the hand tools, by portable "shop-vac" vacuum collectors as needed and normal "good housekeeping" procedures. Holes are cut as needed in the pool to accommodate drain and filter lines and other items installed in the final assembly process. After passing a final quality control inspection, the pool is prepared for shipping.

Eight separate bays allow for independent manufacturing operations in each separate bay. Production may occur on a continuous basis, 24 hours per day, 7 days per week, 52 weeks per year, which equals 8760 hours per year. The facility has four exhaust fan systems, each servicing a "block" of two layup bays.

3. EMISSIONS

3.1 General Methodology

The principal emissions from the facility will include volatile organic compounds generally, and styrene and MMA specifically. Solvents, namely acetone or an aqueous compound, are used to flush and clean hose lines and equipment. Emissions of particulate matter are incidental in nature. Although natural-gas fired heating units will produce nitrogen oxides, carbon monoxide and sulfur dioxide, none of those emissions trigger meaningful regulatory consequence.

3.1.1. HAP Emission Factors for Resins and Gelcoats

For purposes of calculating HAP (and VOC) emissions from the resins and gelcoats involved in this operation, emission factors for nonatomized mechanical/spray applications from Table 1 from 40 CFR Part 63 Subpart WWWW were used. Appendix A includes calculations of potential VOC and HAP emissions. For both resins and gelcoats, Permittee assumed the highest HAP content from any of the products used for purposes of calculating potential emissions. So while Permittee may use some resins with lower HAP content than 45%, potential emissions assumed all the resin had a 45% HAP content. The same applies to gelcoats, with the exception of tooling gelcoats, which have a higher HAP content and their emissions were calculated separately. Since the HAPs calculated (styrene and MMA) are also VOC, these calculations were also used to estimate the VOC Potential to Emit of this facility.

Gelcoat EF = ((0.4506*%HAPs)-0.0505)*2000 [lb/ton gelcoat used][1]

Resin EF = ((0.157*%HAPs)-0.0165)*2000 [lb/ton resin used][2]

The applicant, during a phone discussion[3], indicates that the HAP content for their gelcoats (except tooling) never exceeds 36.87%, and they are currently in search of even lower HAP gelcoats.

3.1.2 Other VOCs

For any other organic compounds used (solvents, thinners, waxes, mold cleaners...), it is assumed that all VOCs evaporate, and while no calculations for such compounds were included in the application for this renewal, the calculations from the previous permit renewal still apply. They are also included in the Appendix A calculations.

3.2 Potential and Actual Emissions

Permittee submitted calculations for potential emissions with this permit renewal, assuming 6 days of operation per week. The table below reflects emissions assuming operations for 7 days per week. ~~In addition, the table includes emissions from anticipated "typical" production rates.~~

Potential emissions are based on the manufacture of 1 large pool per bay, 8 bays, 7 days per week, 52 weeks per year, and the fabrication of 1 mold every 3 weeks and repair of 1 mold every 2

[1] From 40 CFR Part 60, Subpart WWWW, Table 1 for "Open Molding Operation" using "Nonatomized spray gel coat application" with " nonvapor suppressed gel coat."

[2] From 40 CFR Part 60, Subpart WWWW, Table 1 for "Open Molding Operation" using "Nonatomized mechanical resin application" with " nonvapor suppressed resin".

[3] Phone call with Ken Butler from Arizona Environmental Container on 5/3/10

weeks. These are based on historical estimates from the facility.

POTENTIAL EMISSIONS (TONS ALLOWED BY PERMIT)						
	POLLUTANT					
PROCESS	VOC	HAP	PM10	PM2.5	CO	NOx
Gelcoat & Resin	192.95	192.95	-	-	-	-
Other Misc (Mold construction/repair)	3.97	0.09	-	-	-	-
Grinding &Buffing	-	-	30.5	30.5	-	-
Heaters	-	-	-	-	3.7	4.4
TOTAL	**197**	**193**	**30.5**	**30.5**	**3.7**	**4.4**

ACTUAL EMISSIONS (TONS)						
YEAR	VOC	HAP	PM10	PM2.5	CO	NOx
2008	22.9	22.9	12.7	4.7	0	0
2007	30.95	30.7	4.7	4.7	0	0
2006	43.40	42.98	7.0	--[4]	0.03	0.03

~~3.2.1 VOCs/HAPs~~

~~_____~~	~~VOC/HAP POTENTIAL Emissions (TPY)~~	~~VOC/HAP "TYPICAL" Emissions (TPY)~~
~~Gelcoat~~	~~50.51~~	~~5.78~~
~~Resin~~	~~141.91~~	~~16.25~~
~~**TOTAL**~~	~~**192.52**~~	~~**22.03**~~

3.2.1 PM10

In previous permitting actions, PCAQCD estimated ~~An estimated~~ 0.25 tons per year of PM10 particulates ~~will~~ would be emitted from the grinding process,~~. This~~ assuming 0.5 inch of material is ground from the edge of each pool produced and 50 percent falls

[4] PCAQCD did not begin collecting a PM2.5 emissions inventory until 2007.

within the PM10 range. Also, PCAQCD~~An~~ estimated 3.3 tons per year of PM10 particulates ~~will~~ would be emitted from the buffing operation. This assumes 1.0 mil of material is removed from the entire surface produced and 50 percent falls within the PM10 range.

For purposes of emissions inventory, AECC has calculated PM10 emissions differently, reflecting emissions of up to 12 tons per year. For this renewal, PM10 and PM2.5 potential emissions have been estimated (by PCAQCD) using a ratio based on the 2004 VOC actual emissions[5].

3.2.2 Gas-fired Heater emissions.

The permit application for this facility indicates that the gas-fired ~~make-up-air~~ space heaters will only use a "small quantity" of natural gas. The permit imposes a limit of 10 MMBtu on the aggregate heat input capacity for all natural-gas fired equipment, which caps maximum emissions of products-of-combustion as follows (using AP-42 Tables 1.4-1 and 1.4-2 factors):

- CO . . . . . ~~1.0~~ 3.7 tpy
- NO_x . . . . . 4.4 tpy
- SO_x . . . . . 0.0 tpy
- PM_{10} . . . . . 0.0 tpy

4. REGULATORY REQUIREMENTS AND MONITORING

4.1 TITLE V/PSD Applicability

This facility constitutes a “major source” of Hazardous Air Pollutants (HAPs) and requires a permit pursuant to Title V of the CAA Amendments of 1990.

Even without limitations, the source does not constitute a "major emitting source" for VOCs within the meaning of 40 CFR §51.166, and is not required to go through a Prevention of Significant Deterioration (PSD) review.

4.2 Regulatory Emission Limitations and Compliance/Monitoring

4.2.1 Opacity and Reasonable Precautions

While the federally enforceable opacity limitation is 40%, there is a locally enforceable 20% opacity limitation that applies to point sources not already regulated by a new source performance standard.

At this facility, the 20% limitation would apply to the fuel burning and trimming/finishing operations since they are not regulated by any other standard. To monitor for compliance with this standard, the permit requires semi-annual opacity “screenings”, and required Method 9 opacity tests only when visible emissions are observed. These screenings are also required for open-area fugitive sources.

[5] 2004 VOC emissions were chosen due to this year being the highest pool producer. Actual VOC emissions were 69.05 tons that year, and PM10 emissions were calculated at 10.70 tons. For potential emissions of 197 tons of VOC, PM10 emissions should be approximately 30.5 tpy.

Also, the permit requires weekly filter inspections.

The Reasonable Precautions requirements apply to any operations that generate particulate matter, whether during production, or in the storage yard form vehicle traffic or actual storage.

4.3 NSPS/NESHAP Applicability

40 CFR Part 63 Subpart WWWW, Reinforced Plastics MACT

This facility is a major source of HAPs and subject to the Reinforced Plastic Composites MACT standard. MACT requirements included in the current permit are a combination of requirements from a "case-by-case" MACT established by PCAQCD for the original Title V permit, and requirements from the promulgated MACT standard which have been incorporated into the permit during revisions. Additional information on the "case-by-case" MACT can be found in the Technical Support Document for permit V20612.000, and information on other requirements can also be found in the TSDs for revisions V20612.R01 and .R02.

The four compliance options in this MACT standard allow the permittee to demonstrate compliance by simply meeting the organic HAP emission limits of Table 3 of the subpart, whether it is done by averaging, or by meeting the HAP contents product by product.

The MACT standard provides more flexible compliance limits for corrosion-resistant/ high-strength (CR/HS) and high performance gel coats and resins. These resins and gel coats are specifically defined in 40 CFR §63.5935. The permit requires that Permittee keep supporting evidence that the resins and gel coats are CR/HS and/or high performance. The evidence needs to show that these products comply with the definitions in §63.5935.

4.4 Non-Applicable Requirements

4.4.1 Compliance Assurance Monitoring (CAM)

The requirements of 40 CFR 64, Compliance Assurance Monitoring (CAM), are not applicable since AECC does not use a control device to achieve compliance with any emission limitation or standard for a pollutant for which the source has potential pre-control device emissions greater than or equal to major source levels for that pollutant.

4.4.2 Arizona HAPs Rule

The Arizona HAPs rule was promulgated in 2006 and it became effective as of January 2007. It includes standards for new and modified sources of HAPs, as of 1/07. It does not apply to major sources already subject to a NESHAP or MACt standard.

5. AMBIENT IMPACT ASSESSMENT

5.1 VOCs

No VOC impact analysis has been conducted since the potential to emit from this facility does not trigger any modeling requirements (PSD).

5.2 HAPs/AAAQGs (conducted during the 2005 renewal)

A SCREEN3 analysis shows that the worst-case scenario of 225.15 tons per year styrene (this

total includes other HAPs which are not styrene) will result in an impact of 1310 µg./m^3. This falls well below the 1-hr Arizona Ambient Air Quality Guideline of 3500 µg./m^3.

6. LIST OF ABBREVIATIONS

ADS . . . . . Agglomerative Dust Suppression
AP-42 . . . . . .
"Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources", 5th Edition
CAA . . . . . Clean Air Act
CAM . . . . . Compliance Assurance Monitoring
CFR . . . . . Code of Federal Regulations
CO . . . . . Carbon Monoxide
hr . . . . . Hour
lb . . . . . Pound
MACT . . . . . Maximum Achievable Control Technology
MMBTU . . . . . Million British Thermal Units
Mod. . . . . Modification
MSDS . . . . . Material Safety Data Sheet
NOX . . . . . Nitrogen Oxides
NSPS . . . . . New Source Performance Standard
NSR . . . . . New Source Review
PCAQCD . . . . . Pinal County Air Quality Control District
PGCAQCD . . . . . Pinal-Gila Counties Air Quality Control District
PM10 . . . . . Particulate Matter nominally less than 10 Micrometers
PSD . . . . . Prevention of Significant Deterioration
SIC . . . . . Standard Industrial Code
SOX . . . . . Sulfur Dioxide
tpy . . . . . tons per year
TSD . . . . . Technical Support Document
VOC . . . . . Volatile Organic Compound
yr . . . . . year

APPENDIX A
VOC & HAP POTENTIAL EMISSIONS

POOL PRODUCTION

Potential Production = 8 bays x 1 pool/bay/day x 365 days/yr = 2920 pools/year

Usage per Pool: 300 lb gelcoat 1800 lb resin

Gelcoat/Resin Emissions

Product	Usage (ton)	% HAPS	EF[1] (lb/ton)	Total HAP (lb/yr)	Total HAP/VOC[2] (ton/yr)
Gelcoat	438	36.87%	231.27	101297.33	50.65
Resin	2628	45.00%	108.30	284612.40	142.31
					192.95

MOLD CONSTRUCTION AND REPAIR

Potential Production
= 1 bay x 1 mold x 52 weeks/yr/3 weeks = 17.33 molds/year
= 1 bay x 1 repair x 52 weeks/yr/2 weeks = 26.00 repairs/yr

Resin and Gelcoat Usage/Emissions per Mold Construction

Product	Usage (gallons)	Density (lb/gal)	Usage (ton)	% HAPS	(lb/ton)	Total HAP (lb/yr)	(ton/yr)
Resin	275	8.71	1.20	44.90%	107.99	129.33	0.06
Tooling gel	20	9.1	0.09	46.55%	318.51	28.98	0.01
	295		1.29			158.31	0.08

Other Usage/Emissions per Mold Construction

Product	Usage (gallons)	Density (lb/gal)	Usage (ton)	% VOC	Total VOC (ton/yr)
MEK/Peroxide	4	9.17	0.01834	99.00%	0.02
Partall#10	0.63	7.92	0.0024948	41.50%	0.00
210 Cleaner	1.5	7.26	0.005445	95.00%	0.01
Bondo	4	12.5	0.025	20.00%	0.01
Waxcan	1	6.65	0.003325	60.00%	0.00
Wax spray	1	6.45	0.003225	60.90%	0.00
Cream Hardener	0.25	10	0.00125	45.00%	0.00
					0.04

Resin and Gelcoat Usage/Emissions per Mold Repair

Product	Usage (gallons)	Density (lb/gal)	Usage (ton)	% HAPS	EF1 (lb/ton)	Total HAP (lb/yr)	Total HAP/VOC[2] (ton/yr)
Resin	30	8.71	0.13	44.90%	107.99	14.11	0.01
Orange tooling	10	9.1	0.05	46.55%	318.51	14.49	0.01
	40		0.18			28.60	0.01

Other Usage/Emissions per Mold Repair

Product	Usage (gallons)	Density (lb/gal)	Usage (ton)	% VOC	Total VOC (ton/yr)
MEK/Peroxide	0.75	9.17	0.0034	99.00%	0.00
Partall#10	2	7.92	0.00792	41.50%	0.00
210 Cleaner	0.5	7.26	0.001815	95.00%	0.00
Styrene	0.5	12.5	0.003125	100.00%	0.00
					0.01

VOC PTE Emissions from Mold Construction and Mold Repair

Mold Construction	(tons/yr)	1.98
Mold Repair	(tons/yr)	0.67
		2.66

(WORST-CASE IF BOTH BAYS USED FOR MOLD CONSTRUCTION) (TPY) = **3.97**

TOTAL (PRODUCTION/CONSTRUCTION/REPAIR) EMISSIONS (TPY) = 196.92

Notes:
1. Emissions factors for nonatomized spray gel coat and nonatomized mechanical resin application from Table 1 to Subpart WWWW of Part 63.
2. This total also reflects Total VOCs since HAPs are mostly styrene and MMA.