

**NORTH CAROLINA DIVISION OF
 AIR QUALITY**

Application Review

Issue Date:

Region: Winston-Salem Regional Office
County: Randolph
NC Facility ID: 7600353
Inspector's Name: Dylan Wright
Date of Last Inspection: NA
Compliance Code: NA

Facility Data

Applicant (Facility's Name): Toyota Battery Mfg. Inc. dba Toyota Battery Manufacturing NC

Facility Address:

Toyota Battery Mfg. Inc. dba Toyota Battery Manufacturing NC
 7039 State Road 1006
 Julian, NC 27283

SIC: 3692 / Primary Batteries, Dry and Wet

NAICS: 335912 / Primary Battery Manufacturing

Facility Classification: Before: Small **After:** Title V

Fee Classification: Before: Small **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0202, .0515, .0516, .0521, .0524, .0535, .0540, .0605, .0611, .1111; 02Q .0309, .0711

NSPS: IIII, JJJJ

NESHAP: ZZZZ, CCCCCC

PSD: NA

PSD Avoidance: NA

NC Toxics: 02Q .0711

112(r): NA

Other: 02D .1806

Contact Data

Application Data

Facility Contact	Authorized Contact	Technical Contact	Application Number: 7600353.22B Date Received: 07/21/2022 Application Type: Modification Application Schedule: State Existing Permit Data Existing Permit Number: 10735/R00 Existing Permit Issue Date: 05/06/2022 Existing Permit Expiration Date: 04/30/2030
Rebecca Bright Manager-Environmental Planning (859) 473-3631 151 Engineering Way Georgetown, KY 25033	April Mason General Manager, Plant Services (502) 867-2299 151 Engineering Way Georgetown, KY 25033	Rebecca Bright Manager-Environmental Planning (859) 473-3631 151 Engineering Way Georgetown, KY 25033	

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
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No emissions inventory on record. The emissions inventory is due 01/30/2030.

Review Engineer: Eric L. Crump, P.E.

Review Engineer's Signature: _____ **Date:** _____

Comments / Recommendations:

Issue 10735/R01
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application

Toyota Battery Mfg. Inc. dba Toyota Battery Manufacturing NC (hereinafter referred to as Toyota) is an electric vehicle battery manufacturing facility located in Julian, Randolph County, North Carolina. The facility currently operates under Air Quality Permit No. 10735R00, issued May 6, 2022, with an expiration date of April 30, 2030.

On July 22, 2022, the North Carolina Division of Air Quality (DAQ) received a permit application from Toyota—No. 7600353.22B—to modify the air permit by adding seven battery electric vehicle (BEV) battery production lines to the facility, along with additional equipment (emergency generators, fire pump, tanks, and cooling towers) to support these new production lines.

2. Description of Proposed Modification

Toyota is adding seven new BEV battery production lines to the facility, comprised of the following processes:

- Electrode (Cathode & Anode) Mixing, Pressing & Slitting
- Winding, Terminal Bending, and Can Laser Sealing
- Inspection, Cell Stacking, and Electrolyte Injection
- Cap Laser Sealing

Dry dust collectors will be used to control dust from both the mixing processes, and the winding machines used in the assembly process. Wet dust collectors will be used to control dust from seal-weld machines used in the assembly process. One n-methyl-2-pyrrolidone (NMP) scrubber will be installed on each BEV line to remove NMP from coating exhaust gas (volatile organic compound (VOC) concentration less than 10 ppm). Since maintaining cleanliness is essential to battery production, and NMP recovery is economically necessary due to its high cost, these scrubbers have been determined to be inherent to the manufacturing process and are not considered emission control devices¹.

The new BEV lines include the following emission sources.

Emission Source ID No.	Emission Source Description
ES-CCD5	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S05)
ES-CCD6	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S06)
ES-CCD7	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S07)
ES-CCD8	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S08)
ES-CCD9	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S09)
ES-CCD10	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S010)
ES-CCD11	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S11)
ES-CPM5-11	Cathode: Paste Mixing BEV Lines 5-11 with inherent particulate filters DC-803-01 through DC-809-01
ES-CPH5-11	Cathode: Powder Handling BEV Lines 5-11 with inherent particulate filters DC-803-02 through DC-809-02
ES-CPS5-11	Cathode: Press BEV Lines 5-11 with inherent particulate filters DC-803-03 through DC-809-03

¹ U.S. Environmental Protection Agency. *Criteria for Determining Whether Equipment is Air Pollution Control Equipment or Process Equipment*, Solomon, D, Office of Air Quality Planning and Standards. Letter dated November 27, 1995.

Emission Source ID No.	Emission Source Description
ES-APM5-11	Anode: Mixing BEV Lines 5-11 with inherent particulate filters DC-803-04 through DC-809-04
ES-APH5-11	Anode: Powder Handling BEV Lines 5-11 with inherent particulate filters DC-803-05 through DC-809-05
ES-APP5-11	Anode: Press BEV Lines 5-11 with inherent particulate filters DC-803-06 through DC-809-06
ES-AC5-11	Anode: Tab-cut BEV Lines 5-11 with inherent particulate filters DC-803-07 through DC-809-07
ES-WIN810	Winding BEV Lines 5-11 with inherent particulate filters DC-803-08 through DC-809-08
ES-CPW5-11	Cathode: Press BEV Lines 5-11 with inherent wet dust collectors WDC-803-01 through WDC-809-01
ES-ACW5-11	Anode: Tab-cut BEV Lines 5-11 with inherent wet dust collectors WDC-803-02 through WDC-809-02
ES-TCA5-11	TopCap Assembly BEV Lines 5-11 with inherent wet dust collectors WDC-803-03 through WDC-809-03
ES-AF5-11	Assembly Front BEV Lines 5-11 with inherent wet dust collectors WDC-803-04 through WDC-809-04
ES-MOD5-11	Module BEV Lines 5-11 with inherent wet dust collectors WDC-803-05 through WDC-809-05
ES-GEN2000b	2000 kW Generator

To support the new BEV lines, Toyota is also adding one diesel fired 2000-kilowatt (kW) emergency generator with a displacement of 18.5 liters to provide backup power for heating, ventilation, and air conditioning (HVAC). Finally, Toyota is adding the following sources which would be classified as insignificant activities under NCAC 15A 02Q .0102:

- One 1250 kW diesel fired emergency generator (Tier 3)
- One 50 kW diesel fired emergency generator (Tier 3) for emergency ventilation (Tier 1)
- One 147 horsepower (hp) diesel fire pump (Tier 3)
- Four NMP Supply Tanks (6,604 gallons each)
- Four NMP Recovery Tanks (5,283 gallons each)
- Two Sub NMP Recovery Tanks (793 gallons each)
- One Electrolyte Receiving Tank
- One Electrolyte Supply Tank
- Two Chemical Wastewater Collection Tanks
- Two Cooling Towers

3. Application Chronology

July 21, 2022	Permit Application No. 7600353.22B was received as a 02Q .0300 modification.
July 25, 2022	DAQ sends letter to Toyota acknowledging receipt of the application, that all required elements (except ePayment) were included.
July 26, 2022	DAQ receives permit fee payment via ePayment.

August 9, 2022 DAQ sends email to Toyota requesting clarification regarding emission calculations in the permit application.

August 16, 2022 Toyota responds via email to DAQ request for clarifications.

August 30, 2022 DAQ sends email to Toyota requesting additional clarifications; Toyota responds via email providing additional information.

September 9, 2022 Draft permit and permit review forwarded to DAQ Permit Section supervisor for comments.

September 20, 2022 Comments received from DAQ Permit Section supervisor.

September 20, 2022 Draft permit and permit review forwarded to Winston-Salem Regional Office (WSRO) and Toyota for comments.

September 22, 2022 Comments on draft permit and review received from WRSO.

September 23, 2022 Comments on draft permit and review received from Toyota.

September 26, 2022 Draft permit and permit review forwarded to SSCB for comments.

September 28, 2022 Comments on draft permit and review received from SSCB.

xxx Public comment period ends.

xxx Permit issued.

4. Changes to Permit and ESM Discussion

The following table summarizes changes made to the current Toyota permit resulting from this permit modification.

Page No.	Section	Description of Changes
Cover and throughout	---	<ul style="list-style-type: none"> Updated all dates and permit revision numbers Changed all citations of 15A NCAC 2D to 15A NCAC 02D Changed all citations of 15A NCAC 2Q to 15A NCAC 02Q
1-4	Emission Sources Table	<ul style="list-style-type: none"> Divided table into three subsections (HEV Battery Production, BEV Battery Production, and Miscellaneous) Added BEV battery line sources (Lines 5-11) Added generator (ID No. ES-GEN2000b)
5	A.3	Split Condition 3 into two conditions: Condition 3 (Permit Renewal Requirement) and Condition 4 (Annual Emission Inventory Requirement). Renumbered subsequent conditions accordingly.
	A.5	Added new condition under 02Q .0504 requiring submittal of application for Title V permit prior to commencing operations
6	A.7 and A.9	Added ID No. ES-GEN2000b to condition (40 CFR 60 Subpart IIII)

Page No.	Section	Description of Changes
8	A.9.d.iv.C	Added phrase “or non-emergency demand response” (text from 40 CFR 60 Subpart IIII not included previously in permit)
9	A.9.f.ii	Changed “described above” to “described in paragraph 7.d.iv.C.I above”
11	A.12	<ul style="list-style-type: none"> Added Cathode Coating and Drying Lines 5 through 11 to table Changed Target Parameter in table from “< 100 tons per year” to “< 250 tons per year”
13	A.14.b.i and A.14.c.i	Changed ES-CCD4 to ES-CCD11
14	A.16	Reformatted list of sources to bullets, and added sources from BEV lines
16	A.16.e.ii	Changed “indicates” to “indicate”
19	A.19	Added source ID Nos. IES-25 through IES-27
---	Attachment	<ul style="list-style-type: none"> Changed description of source ID No. IES-CT from “Cooling Towers” to “Four Cooling Towers” Added source ID Nos. IES-23 through IES-39

The following changes have been made to the ESM:

Revisions: Changed description of source ID No. IES-CT from “Cooling Towers” to “Four Cooling Towers”

Emission Sources Added:

Source ID No.	Source Description
ES-CCD5	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S05)
ES-CCD6	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S06)
ES-CCD7	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S07)
ES-CCD8	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S08)
ES-CCD9	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S09)
ES-CCD10	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S010)
ES-CCD11	Cathode: Coating and Drying Line 5 (BEV) with inherent web scrubber (CD-S11)
ES-CPM5-11	Cathode: Paste Mixing BEV Lines 5-11 with inherent particulate filters DC-803-01 through DC-809-01
ES-CPH5-11	Cathode: Powder Handling BEV Lines 5-11 with inherent particulate filters DC-803-02 through DC-809-02
ES-CPS5-11	Cathode: Press BEV Lines 5-11 with inherent particulate filters DC-803-03 through DC-809-03
ES-APM5-11	Anode: Mixing BEV Lines 5-11 with inherent particulate filters DC-803-04 through DC-809-04
ES-APH5-11	Anode: Powder Handling BEV Lines 5-11 with inherent particulate filters DC-803-05 through DC-809-05
ES-APP5-11	Anode: Press BEV Lines 5-11 with inherent particulate filters DC-803-06 through DC-809-06
ES-AC5-11	Anode: Tab-cut BEV Lines 5-11 with inherent particulate filters DC-803-07 through DC-809-07
ES-WIN810	Winding BEV Lines 5-11 with inherent particulate filters DC-803-08 through DC-809-08
ES-CPW5-11	Cathode: Press BEV Lines 5-11 with inherent wet dust collectors WDC-803-01 through WDC-809-01

Source ID No.	Source Description
ES-ACW5-11	Anode: Tab-cut BEV Lines 5-11 with inherent wet dust collectors WDC-803-02 through WDC-809-02
ES-TCA5-11	TopCap Assembly BEV Lines 5-11 with inherent wet dust collectors WDC-803-03 through WDC-809-03
ES-AF5-11	Assembly Front BEV Lines 5-11 with inherent wet dust collectors WDC-803-04 through WDC-809-04
ES-MOD5-11	Module BEV Lines 5-11 with inherent wet dust collectors WDC-803-05 through WDC-809-05
ES-GEN2000b	2000 kW Generator
IES-23	793 Gallon Sub NMP Recovery Tank
IES-24	793 Gallon Sub NMP Recovery Tank
IES-25	1,250 kW diesel-fired emergency generator (Tier 3)
IES-26	50 kW diesel-fired emergency generator (Tier 3) for emergency ventilation (Tier 1)
IES-27	147 hp diesel fire pump (Tier 3)
IES-28	6,604 Gallon NMP Supply Tank
IES-29	6,604 Gallon NMP Supply Tank
IES-30	6,604 Gallon NMP Supply Tank
IES-31	6,604 Gallon NMP Supply Tank
IES-32	5,283 Gallon NMP Recovery Tank
IES-33	5,283 Gallon NMP Recovery Tank
IES-34	5,283 Gallon NMP Recovery Tank
IES-35	5,283 Gallon NMP Recovery Tank
IES-36	Electrolyte Receiving Tank
IES-37	Electrolyte Supply Tank
IES-38	Chemical Wastewater Collection Tank
IES-39	Chemical Wastewater Collection Tank

5. Facility-wide Emissions

The previous application review for the Toyota facility (Dylan Wright, Permit No. 10735R00, May 6, 2022) provided the following summary of facility-wide emissions:

Pollutant	Potential Emissions (tons per year)
PM	31.69
PM ₁₀	31.60
PM _{2.5}	31.60
SO ₂	0.05
NO _x	9.85
CO	5.35
VOC	30.76
Total HAP	0.324
Highest Individual HAP (methanol)	0.322

Emissions from the addition of the seven BEV battery production lines were calculated using a similar methodology as used for the initial four HEV battery production lines.

PM emissions for the BEV lines were estimated assuming an exit grain loading of 0.01 grains (gr) per standard cubic foot (ft³) and multiplying that loading by the fabric filter flow rate in minutes per hour (min/hr).

$$PM = \text{filter flow rate} \left(\frac{ft^3}{min} \right) \times 0.01 \frac{gr}{ft^3} \times \frac{lb}{7,000 gr} \times \frac{60 min}{hr}$$

VOC emissions: VOC emissions from the BEV processes (electrode mixing, paste application, and electrolyte filling, were estimated using the following methods (conversions from pounds to tons and from hours to years are not shown):

- Electrode mixing: Using an emissions factor of 10 parts per million (ppm) from the NMP used in the electrode mixing process, and a molecular weight for NMP of 99.13 pounds per pound-mole (lb/lbmol) the following equation was used:

$$VOC \left(\frac{lb}{hr} \right) = \text{flow rate} \left(\frac{ft^3}{min} \right) \times 99.13 \frac{lb}{lbmol} \times \left(\frac{10 ppm}{10^6} \right) \times \frac{1}{385.5 ft^3 / lbmol} \times \frac{60 min}{hr}$$

- Application of paste to electrodes: Emissions were calculated based on the electrode paste being comprised of 0.3% DPK4 (a paste ingredient containing five percent methanol (MeOH) content):

$$VOC (lb/yr) = \text{total paste usage} (lb/yr) \times 0.003 \times 0.05$$

- Electrolyte filling for the BEV lines: Emissions were calculated based on annual electrolyte usage in gallons per year (gal/yr), with an electrolyte VOC content of 85%, an electrolyte density of 10.27 pounds per gallon (lb/gal) and assuming a 1% electrolyte evaporation loss.

$$VOC \left(\frac{lb}{yr} \right) = \text{electrolyte usage} \left(\frac{gal}{yr} \right) 10.27 \frac{lb}{gal} \times 0.85 \times 0.01$$

- There was no additional use of ethanol from cleaning activities due to addition of the BEV lines.

For the diesel-fired generator, engines, and fire pump, based on 500 hours per year of operation:

- PM, NO_x, VOC, and CO emissions were estimated using the uncontrolled emission factors for diesel engines (provided in units of grams per brake kilowatt-hour, or g/bkW-hr), taken from the Tier II emission limits established for engines in 40 CFR Part 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (more specifically, 40 CFR 60.4202).
- SO₂ emissions were estimated using uncontrolled emission factors for diesel engines from U.S. EPA's AP-42 Compilation of Air Pollutant Emission Factors, Volume 1 – Stationary Sources, Fifth Edition, Chapter 3.4, Table 3.4-1.
- HAP emissions were determined using the NC DEQ Internal Combustion (large gasoline and diesel engines) spreadsheet (Rev. J, 06/22/2015), which utilizes emission factors from AP-42.

The following table displays potential annual emissions from Phase 1 (initial construction including the HEV lines), potential annual emissions from each element of the modification, or Phase 2 (BEV lines, additional supporting tanks, and generators), and the total potential emissions for the entire facility, including both phases 1 and 2. From this emissions data, the following can be observed:

- Emissions from the two additional cooling towers, the storage tanks, the smaller generators (1250 kW and 50 kW), and the 147 hp fuel pump meet the criteria for insignificant activities under 15A NCAC 02Q .0503(8) because the emissions from each source would not violate any applicable emissions standard, the potential uncontrolled criteria pollutant emissions from each source

would be no more than five tons per year, and the potential uncontrolled HAP emissions from each source would be below 1000 pounds per year.

TOTAL POTENTIAL EMISSIONS – BEFORE AND AFTER ADDITION OF BEV LINES

Emissions are presented in tons per year (ton/yr)

Pollutant	Current Permitted Facility Phase 1	Modification - Phase 2									TOTAL Phases 1 and 2
		BEV Lines 5-11	BEV Cleaning Activities	BEV NMP Storage Tanks	BEV Cooling Towers	BEV New 2000 kW Generator	BEV New 1250 kW Generator	BEV New 50 kW Generator	BEV New 147 hp Fire Pump	TOTAL Phase 2	
PM	31.69	54.23	0	0	0.15	0.230	0.138	0.0072	0.081	54.75	86.44
PM-10	31.60	54.23	0	0	0.06	0.230	0.138	0.0072	0.081	54.66	86.26
PM-2.5	31.60	54.23	0	0	0.06	0.230	0.138	0.0072	0.081	54.66	86.26
SO ₂	0.050	0	0	0		0.0086	0.0052	0.034	0.076	0.048	0.098
NO _x	9.85	0	0	0		7.37	4.41	0.12	1.14	11.89	21.74
CO	5.350	0	0	0		4.028	2.41	0.028	0.25	6.47	11.82
VOC	13.51*	228.76	2.74 [†]	0.0037		0.413	0.249	0.122	0.091	232.38	245.89
Total HAP	0.324	0.42	0	0	0	0	0	0	0	0.42	0.75
Largest Single HAP [‡]	0.322	0.42	0	0	0	0	0	0.001	0.001	0.42	0.74

*Of the total VOC emissions from Phase I, 5.25 tpy are fugitive emissions from cleaning operations

[†]Fugitive VOC emissions

[‡]Methanol

- As shown, the addition of the HEV lines and related sources increase potential emissions of criteria pollutants and HAP by more than double. However, potential VOC emissions for the entire facility increase significantly—from 13.51 tons/yr to 245.89 tons/yr (including fugitive emissions)—with the addition of the HEV lines.
- Under 40 CFR 51.166(b)(1)(iii), fugitive emissions shall not be included in determining whether a source is a major stationary source for prevention of significant deterioration (PSD) of air quality, unless the source belongs to one of the 28 categories listed therein. The Toyota facility does not fall under any of the 28 categories. If the fugitive VOC emissions at the Toyota facility—7.99 tpy of VOC emitted from cleaning operations—are subtracted from the total potential VOC emissions, this leaves an annual projected potential VOC emissions total of 237.90 tpy – which is less than the 250 tpy major source threshold for prevention of significant deterioration (PSD) in 40 CFR 51.166(b)(1)(i).

6. Regulatory Review

Toyota is subject to the following state regulations, in addition to the requirements listed in the General Conditions of the permit:

- 15A NCAC 02D .0202 – Registration of Air Pollution Sources
- 15A NCAC 02D .0515 – Particulates from Miscellaneous Industrial Processes
- 15A NCAC 02D .0516 – Sulfur Dioxide (SO₂) Emissions from Combustion Sources
- 15A NCAC 02D .0521 – Control of Visible Emissions (VE)
- 15A NCAC 02D .0524 – New Source Performance Standards (NSPS)
- 15A NCAC 02D .0535 – Excess Emissions Reporting and Malfunctions
- 15A NCAC 02D .0540 – Particulates from Fugitive Dust Emission Sources
- 15A NCAC 02D .0605 – General Recordkeeping and Reporting Requirements
- 15A NCAC 02D .0611 – Monitoring Emissions from Other Sources
- 15A NCAC 02D .1111 – Maximum Achievable Control Technology
- 15A NCAC 02D .1806 – Control and Prohibition of Odorous Emissions (State-enforceable only)
- 15A NCAC 02Q .0309 – Termination, Modification and Revocation of Permits
- 15A NCAC 02Q .0711 – Emission Rates Requiring a Permit (State-enforceable only)

With this modification, the new BEV lines, as well as the emergency generators, fire pump, and tanks added to the facility in support of those lines will become subject to the above regulations as appropriate. No additional state regulations will be added to or removed from the permit due to changes to the facility resulting from this permit modification (see Dylan Wright, Permit No. 10735R00, May 6, 2022).

7. National Emission Standards for Hazardous Air Pollutants (NESHAPS): Maximum and/or Generally Achievable Control Technology (MACT/GACT)

Toyota remains subject to the following standards under 40 CFR Part 63:

Subpart ZZZZ "National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines." The following equipment added to the Toyota facility with this modification will be subject to this NESHAP.

- ES-GEN2000b - 2000 kW diesel-fired generator
- IES-25 – 1,250 kW diesel-fired emergency generator
- IES-26 – 50 kW diesel-fired emergency generator
- IES-27 - 147 hp diesel-fired fire pump

However, as discussed earlier in this review, the two smaller generators (IES-25 and IES-26) and the fire pump IES-27 will be considered as insignificant activities in this permit under 15A NCAC 02Q .0503(8), and therefore specific permit conditions will not be included in the permit for these sources.

In accordance with 40 CFR §63.6590(c)(1), Toyota shall meet the requirements of 40 CFR 63 Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart IIII for compression ignition engines, or 40 CFR 60 Subpart JJJJ for spark ignition engines. There are no spark ignition engines identified at Toyota at this time, and none have been included in this modification.

Subpart CCCCCC. "National Emission Standards for Hazardous Air Pollutants for Area Sources: Paints and Allied Products Manufacturing." The following sources added to the permit through this modification will be subject to this NESHAP:

- Cathode: Paste Mixing BEV Lines 5-11 with inherent particulate filters DC-803-01 through DC-809-01 (ID No. ES-CPM5-11_
- Cathode: Powder Handling BEV Lines 5-11 with inherent particulate filters DC-803-02 through DC-809-02 (ES-CPH5-11)
- Cathode: Press BEV Lines 5-11 with inherent particulate filters DC-803-03 through DC-809-03 (ES-CPS5-11)
- Anode: Mixing BEV Lines 5-11 with inherent particulate filters DC-803-04 through DC-809-04 (ES-APM5-11)
- Anode: Powder Handling BEV Lines 5-11 with inherent particulate filters DC-803-05 through DC-809-05 (ES-APH5-11)
- Anode: Press BEV Lines 5-11 with inherent particulate filters DC-803-06 through DC-809-06 (ES-APP5-11)
- Anode: Tab-cut BEV Lines 5-11 with inherent particulate filters DC-803-07 through DC-809-07 (ES-AC5-11)
- Winding BEV Lines 5-11 with inherent particulate filters DC-803-08 through DC-809-08 (ES-WIN810)
- Cathode: Press BEV Lines 5-11 with inherent wet dust collectors WDC-803-01 through WDC-809-01 (ES-CPS5-11)

While these sources have particulate filters and wet dust collectors as noted in the source descriptions, these devices are considered inherent to the production process, since it is essential to remove any trace dust away from the product (anode and cathode) to avoid costly product defects. This rationale was established in the initial application review for this facility as a policy decision at the direction of senior DAQ management (D. Wright, 10735R00, May 6, 2022 – also see the footnote in Section 2 of this review). Compliance is expected.

8. New Source Performance Standards (NSPS)

Toyota is subject to the following NSPS under 40 CFR Part 60:

- 40 CFR Part 60, NSPS Subpart IIII "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE)"
- 40 CFR Part 60, Subpart JJJJ, "Standards of Performance for Stationary Spark Ignition Internal Combustion Engines",

In accordance with 40 CFR §63.6590(c)(1), Toyota shall meet the requirements of 40 CFR 63 Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart IIII for compression ignition engines, or 40 CFR 60 Subpart JJJJ for spark ignition engines. As noted earlier in this review, there are no spark ignition engines identified at Toyota at this time, and none have been included in this modification. Therefore, the new diesel-fired engines listed above in Section X of this permit will be subject to Subpart IIII. Compliance is expected.

9. New Source Review (NSR)/Prevention of Significant Deterioration (PSD)

Randolph County is considered in attainment or unclassifiable for all regulated pollutants. As discussed in Section 5 of this review, this modification will not result in potential emissions increases of regulated pollutants equal to or exceeding the 250 tpy major source threshold for PSD in 40 CFR 51.166(b)(1)(i). The facility will remain PSD minor following this modification.

10. Risk Management Plan (RMP) Requirements

40 CFR Part 68 requires stationary sources storing more than threshold quantities of regulated substances to develop a RMP in accordance with Section 112(r) of the Clean Air Act. The RMP would list the potential effects of a chemical accident at the facility, steps the facility is taking to prevent an accident, and emergency response procedures to be followed if an accident should occur.

Toyota is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in the Rule. This permit modification does not affect the 112(r) status of the facility.

11. Compliance Assurance Monitoring (CAM)

The CAM rule (40 CFR 64) applies to each pollutant specific emissions unit located at a major source that is required to obtain a Title V, Part 70 or 71 permit if it meets all of the following criteria:

- It is subject to an emission limitation or standard, and
- It uses a control device to achieve compliance, and
- It has potential pre-control emissions that equal or exceed the major source threshold (i.e., either 100 tpy for criteria pollutants, 10 tpy of any individual HAP, or 25 tpy of any combination of HAP).

The following emission limitations or standards are exempted from the CAM rule:

- NSPS or NESHAP standards proposed after November 15, 1990;
- Stratospheric ozone protection requirements under Title VI of the Clean Air Act
- Acid rain program requirements;
- Emission limitations or standards or other requirements that apply solely under an approved emissions trading program;

- An emissions cap that meets requirements of 40 CFR 70.4(b)(12) or 71.6(a)(13);
- Emission limitations or standards for which a Part 70 or 71 permit specifies a continuous compliance determination method, as defined in 40 CFR 64.1, unless the applicable compliance method includes an assumed control device emission reduction factor that could be affected by the actual operation and maintenance of the control device (e.g., a surface coating line controlled by an incinerator for which continuous compliance is determined by calculating emissions on the basis of coating records and an assumed control device efficiency factor based on an initial performance test; in this example, this part would apply to the control device and capture system, but not to the remaining elements of the coating line, such as raw material usage).
- Certain municipally owned utility units, as defined in 40 CFR 72.2.

Please note that the emission unit is not exempted from the CAM rule if nonexempt emission limitations or standards (e.g. a state rule or an older NSPS emission limits) apply to the emissions unit.

No sources at the Toyota facility are subject to the CAM rule at this time, since none of the sources meet all the criteria listed above. This permit modification does not affect this status.

12. Facility-wide Air Toxics Review

Pursuant to 15A NCAC 02Q .0711 "Emission Rates Requiring a Permit," for each toxic air pollutant (TAP) listed in the following table, Toyota has demonstrated that facility-wide actual emissions, where one or more emission release points are obstructed or non-vertically oriented, do not exceed the Toxic Permit Emission Rates (TPERs) listed in 15A NCAC 02Q .0711(a). Toyota is required to operate and maintain the facility such that emissions of these TAPs will not exceed the TPERs listed in 15A NCAC 02Q .0711(a), which are also shown in the following table.

Pollutant	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)
Acetaldehyde (75-07-0)				6.8
Acrolein (107-02-8)				0.02
Arsenic & Compounds (total mass of elemental AS, arsine and all inorganic compounds) (ASC (7778394))	0.053			
Benzene (71-43-2)	8.1			
Benzo(a)pyrene (Component of 83329/POMTV & 56553/7PAH) (50-32-8)	2.2			
Beryllium Metal (unreacted) (Component of BEC) (7440-41-7)	0.28			
Cadmium Metal, elemental, unreacted (Component of CDC) (7440-43-9)	0.37			
Chromium (VI) Soluble Chromate Compounds (Component of CRC) (SolCR6)		0.013		
Formaldehyde (50-00-0)				0.04
Manganese & compounds (MNC)		0.63		
Mercury, vapor (Component of HGC) (7439-97-6)		0.013		
Nickel metal (Component of NIC) (7440-02-0)		0.13		

Pollutant	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)
Toluene (108-88-3)		98		14.4
Xylene (mixed isomers) (1330-20-7)		57		16.4

If actual emissions from all sources will become greater than the corresponding TPERs, Toyota would be required to obtain a permit to emit TAPs and to demonstrate compliance with the requirements of 15A NCAC 02D .1100 "Control of Toxic Air Pollutants. This permit would be required PRIOR to exceeding any of the listed TPERs.

To evaluate whether this modification would result in emissions of any TAP in excess of the TPERs, potential TAP emissions from the modification (Phase 2) were added to the potential TAP emissions from the current permitted facility (Phase 1). These TAP emissions are summarized in the following table and compared to the appropriate TPERs.

Toxic Air Pollutant	TPER (per 02Q .0711(a))	Potential Emissions Phase 1 (tons/yr)	Potential Emissions Phase 2 (tons/yr)	Total Potential Emissions Phase 1 & 2 Total (tons/yr)	Total Potential Emissions Phase 1 & 2 Total (converted to units of TPER)
Acetaldehyde	6.8 lb/hr	1.17E-04	3.15E-04	4.32E-04	9.87E-05 lb/hr
Acrolein	0.02 lb/hr	1.43E-05	3.82E-05	5.25E-05	1.20E-05 lb/hr
Arsenic	0.053 lb/yr	1.87E-07	2.32E-07	4.19E-07	8.39E-04 lb/yr
Benzene	8.1 lb/yr	1.76E-04	0.000424	6.00E-04	1.20 lb/yr
Benzo(a)pyrene	2.2 lb/yr	4.01E-08	9.1E-08	1.31E-07	2.62E-04 lb/yr
Beryllium	0.28 lb/yr	1.40E-07	1.75E-07	3.15E-07	6.29E-04 lb/yr
Cadmium	0.37 lb/yr	1.40E-07	1.69E-07	3.09E-07	6.18E-04 lb/yr
Chromium	0.013 lb/day	1.40E-07	1.69E-07	3.09E-07	1.69E-06 lb/day
Formaldehyde	0.04 lb/hr	1.81E-04	0.000487	6.68E-04	1.52E-04 lb/hr
Manganese	0.63 lb/day	4.90E-04	0.00134	1.83E-03	1.00E-02 lb/day
Mercury	0.013 lb/day	1.40E-07	1.69E-07	3.09E-07	1.69E-06 lb/day
Nickel	0.013 lb/day	4.90E-04	0.00163	2.12E-03	1.16E-02 lb/day
Toluene	98 lb/day 14.4 lb/hr	7.45E-05	0.000177	2.52E-04	1.38E-03 lb/day 5.75E-05 lb/hr
Xylene	57 lb/day 16.4 lb/hr	5.18E-05	0.000127	1.79E-04	9.81E-04 lb/day 4.09E-05 lb/hr

As the data above indicate, the projected TAP emissions rates are not expected to exceed the TPERs. The permit requires Toyota to operate and maintain the facility so that emissions of any listed TAPs from the facility, including fugitive emissions, will not exceed the TPERs; and to maintain records that demonstrate compliance with each TPER. Compliance with 02Q .0711 can be reasonably expected.

13. Compliance History and Status

No compliance inspections have been conducted to date; the Toyota facility is still under construction since the issue of the initial Air Quality Permit (No. 10735R00) on May 6, 2022. Compliance inspections will commence after initial production begins at the facility.

On August 12, 2022, WSRO issued a Notice of Deficiency (NOD) to Toyota for failure to submit the semiannual report required by condition A.12.c of their air quality permit No. 10735R00 (i.e., reporting monthly gallons of NMP received at the facility and monthly gallons of virgin and recycled NMP used in the Cathode Coating and Drying lines). The NOD requested that Toyota submit the report as soon as possible, with an explanation for its lateness, and stating what steps would be taken to ensure future reports are submitted on time. DAQ received the late report from Toyota on August 22, 2022.

14. Other Regulatory Considerations

The following items were required and provided in Permit Application No. 7600353.22B:

- A Professional Engineer's seal was not required for this modification.
- A zoning consistency determination was required for this modification, and this determination from Randolph County Planning and Zoning was received by DAQ on July 25, 2022. This determination confirmed that the proposed modification is consistent with applicable zoning ordinances.
- A permit fee of \$3090 was required for this modification. Payment was received via ePayment on July 26, 2022.

15. Recommendation

It is recommended that Air Quality Permit No. 10735R01 be issued to Toyota Battery Mfg. Inc. dba Toyota Battery Manufacturing NC.