

# ENGINEERING EVALUATION

Plant 12071: Bayer Healthcare LLC  
800 Dwight Way, Berkeley, CA, 94710

## Application 27444: Emergency Standby Diesel Engine-Generator Sets

### BACKGROUND

Bayer Healthcare LLC (Bayer) has applied to obtain an Authority to Construct (AC) and/or a Permit to Operate (PO) for the following equipment:

- S-51 Emergency/standby diesel engine-generator set,  
Caterpillar; Model 3516C; Model Year 2013;  
Engine Family DCPXL78.1NZZ; EPA Tier 2;  
EPA Certification # DCPXL78.1NZZ-027;  
78.1 L; 2937 BHP; 18.9 MMBTU/hr; 16 Cylinders;  
Abated by A-1**
- S-52 Emergency/standby diesel engine-generator set,  
Caterpillar; Model 3516C; Model Year 2013;  
Engine Family DCPXL78.1NZZ; EPA Tier 2;  
EPA Certification # DCPXL78.1NZZ-027;  
78.1 L; 2937 BHP; 18.9 MMBTU/hr; 16 Cylinders;  
Abated by A-2**
- A-1 Hybrid Diesel Particulate Filter/Oxidation Catalyst System  
Rypos HDPF/C,  
CARB-verified, CARB Executive Order DE-07-001-05  
Family Name CA/RYP/2007/PM3+/N00/ST/DPF01**
- A-2 Hybrid Diesel Particulate Filter/Oxidation Catalyst System  
Rypos HDPF/C,  
CARB-verified, CARB Executive Order DE-07-001-05  
Family Name CA/RYP/2007/PM3+/N00/ST/DPF01**

S-51 and S-52 will be located in building B82 on Grayson Street in Berkeley. S-51 and S-52 diesel engines will drive emergency generators to provide electric power during an emergency/testing. S-51 and S-52 are not California Air Resources Board (CARB) certified, but they comply with CARB Air Toxics Control Measure (ATCM) and the District's Best Available Control Technology (BACT) requirements. Moreover, S-51 and S-52 will be abated by CARB-verified diesel particulate filter and oxidation catalyst with a minimum particulate reduction efficiency of 85%. Because the emission rate of diesel particulate matter (DPM) for S-51 and S-52 is less than or equal to 0.15 g/bhp-hr (certified at 0.09 g/bhp-hr), without add-on control, each engine will be allowed to operate for up to 50 hours/year for maintenance and testing purposes (also known as reliability-related activities) – provided they pass the District's Toxic Health Risk Screening Analysis (HRSA) which is discussed later in this report.

### EMISSIONS SUMMARY

Except for SO<sub>2</sub>, the emission factors for other pollutants for S-51 and S-52 were obtained from EPA's engine certification database for the EPA Certification # DCPXL78.1NZZ-027. The SO<sub>2</sub> emissions were calculated based on the maximum allowable sulfur content (0.0015 wt% S) of the diesel fuel with assumption that all of the sulfur present will be converted to SO<sub>2</sub> during the combustion process.

#### Basis:

- 2,937 bhp rated engine power
- Annual emissions based on 50 hr/yr operation for testing and maintenance

- Maximum daily emissions are based on 24 hr/day of operation
- 138 gallons/hr maximum fuel use rate used to estimate heat input rate of 18.9 MMBtu/hr
- NMHC, NO<sub>x</sub>, CO and PM<sub>10</sub> emission factors provided by EPA Certification #: DCPXL78.1NZS-027
- SO<sub>2</sub> emissions are quantified based on the full conversion of 0.0015 wt% (~ 15 ppm) sulfur in the ultra-low sulfur diesel fuel. The SO<sub>2</sub> emission factor was derived from EPA AP-42, Table 3.4-1.
- Per District Policy<sup>1</sup> when the NMHC and NO<sub>x</sub> emission factors are combined, assume a breakdown of 5% and 95%, respectively.
- Controlled PM<sub>10</sub> and DPM emissions are based on an abatement efficiency of 85%.

**Annual Emissions:**

Annual emissions are calculated based on 50 hours per year of operation for testing and maintenance.

**Daily Emissions:**

Daily emissions are calculated, assuming 24 hours of operation, to establish whether S-51 and S-52 trigger BACT requirement.

Table 1 summarizes estimated emissions from S-51 or S-52.

**Table 1 – Estimated Emissions from S-51 or S-52**

Pollutant	Uncontrolled Emission Factor		Uncontrolled Annual Emissions Per Engine	Uncontrolled Max. Daily Emissions Per Engine	Abatement Efficiency	Controlled Annual Emissions Per Engine	Controlled Annual Emissions Per Engine
	(g/kw-hr)	(g/hp-hr)	(lb/yr)	(lb/day)	%	(lb/yr)	(TPY)
NMHC+ NO <sub>x</sub>	5.30	3.95					
NO <sub>x</sub>	5.04	3.75	1214	582.9	0%	1,214	0.607
POC	0.27	0.20	63.92	30.7	0%	63.92	0.032
CO	0.90	0.67	217.1	104.2	0%	217.1	0.109
PM <sub>10</sub>	0.12	0.09	28.94	13.9	85%	4.34	0.002
SO <sub>2</sub> *	0.001515	0.001515	1.43	0.7	0%	1.43	0.0007
		*lb SO <sub>2</sub> /MMBTU					

**PLANT CUMULATIVE INCREASE**

**Table 2 Cumulative Increase**

Pollutant	Permitted Emissions (since April 5, 1991)	Emissions with This Application	Cumulative Emissions Increase
	(TPY)	(TPY)	(TPY)
NO <sub>x</sub>	10.733	1.214	11.947
POC	21.795	0.064	21.859
CO	12.201	0.217	12.418
PM <sub>10</sub>	2.225	0.004	2.229
SO <sub>2</sub>	0.199	0.001	0.200

**TOXIC RISK SCREENING ANALYSIS**

Annual diesel particulate matter (DPM) emissions of 4.34 lbs/year from each source S-51 and S-52 summarized in Table 1 are above the District’s DPM chronic trigger level of 0.34 lbs/yr in Regulation 2-5, Table 2-5-1. Therefore, an HRSA was required.

1

[http://www.baaqmd.gov/~media/Files/Engineering/policy\\_and\\_procedures/Engines/EmissionFactorsforDieselEngines.ashx](http://www.baaqmd.gov/~media/Files/Engineering/policy_and_procedures/Engines/EmissionFactorsforDieselEngines.ashx)

Based on 50 hours per year of operation, the emergency generators passed the HRSA. The sources pose no significant toxic risk, since the increased cancer risk from both sources together to the maximally exposed receptor resident (MEIR) is 0.29 in a million with a hazard index of 0.0001, the increased cancer risk to the maximally exposed receptor worker (MEIW) is 1.0 in a million with a hazard index of 0.00073 and the increased cancer risk to the nearby student receptor attending the Ecole Bilingue de Berkeley Middle School is 0.088 in a million with a hazard index of 0.000071. S-51 and S-52 are not subject to Best Available Control Technology for toxics (TBACT) requirement because the cancer risk levels at MEIR, MEIW, or student receptor are below 1.0 in a million and the hazard indices are below 0.20 from each source. Nevertheless, S-51 and S-52 meet TBACT because the unabated diesel exhaust particulate matter emission rate of 0.09 g/bhp-hour is less than TBACT emissions level of 0.15 g/bhp-hr. Furthermore, emissions from S-51 and S-52 will be abated by DPF. The HRSA shows that S-51 and S-52 also meet the project risk requirements of 10.0 in a million cancer risk and 1.0 hazard index, even at unabated emission levels.

**BACT (BEST AVAILABLE CONTROL TECHNOLOGY)**

Per Regulation 2-2-301, BACT is triggered when a new or modified source has a potential to emit 10.0 pounds or more per highest day. BACT is a source and pollutant specific requirement.

Per Table 1, S-51 and S-52 trigger BACT for NOx, POC, CO, and PM10 since the maximum daily emissions exceed 10.0 lb/day. BACT for this source type is presented in the current BAAQMD BACT/TBACT Workbook for IC Engine – *Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump, Document # 96.1.3, Revision 7* dated 12/22/2010. Table 3 summarizes S-51’s or S-52’s EPA-certified emission rates and compares them to emission rates found in Table 1 of the above BACT document # 96.1.3.

**Table 3: Comparison of S-51’s or S-52’s Emission Rates with BACT Requirements**

Pollutant	S-51’s/ S-52’s EPA Certified Emission Rates g/kW-hr (g/bhp-hr)	District’s BACT 2 Limits Based on CARB ATCM Emission Rates g/kW-hr (g/bhp-hr)
NMHC + NOx	5.3 (4.0)	6.4 (4.8)
CO	0.9 (0.7)	3.5 (2.6)
PM	0.12 (0.09)	0.20 (0.15)

It can be seen from Table 3 above that both S-51 and S-52 meet the District’s BACT 2 requirements. Furthermore, PM emissions from S-51 and S-52 will be abated by DPF, and POC and CO emissions will be abated by oxidation catalyst.

**OFFSETS**

Regulation 2-2-302 requires offsets for NOx and POC emission increases from any new or modified source if the facility-wide emissions of that pollutant are greater than 10 tons/year. Regulation 2-2-303 requires offsets for PM10 or SO2 emission increases from any new or modified source at a major facility which will result in a cumulative increase, minus contemporaneous emission reduction credits, in excess of 1 ton/year since April 5, 1991.

Table 4 summarizes the increase in criteria pollutant emissions and offset requirement due to new sources S-51 and S-52 at Plant 12071.

**Table 4: Cumulative Emissions and Offset Requirement**

Pollutant	Actual Facility Emissions per Most Recent District Inventory (TPY)	Total Permitted Emissions (Pre- + Post – 4/5/1991) (TPY)	Emissions with This Application (TPY)	Adjusted Total Facility Emissions or Cumulative Increase (TPY)	Regulation 2-2-302 and 2-2-303 Offset Triggers (TPY)
NOx	17.382	10.733	1.214	18.596	> 10
POC	18.374	21.795	0.064	21.859	> 10
CO	4.250	12.201	0.217	12.418	NA
PM10	0.369	2.225	0.004	2.229	> 1.0 and Major facility

SO2	0.072	0.199	0.001	0.200	> 1.0 and Major facility
-----	-------	-------	-------	-------	--------------------------

The adjusted total facility-wide emissions exceed 10 tpy for NOx and POC. Therefore, emissions increases from S-51 and S-52 must be offset. Because the facility-wide emissions for NOx and POC are below 35 tpy and Bayer does not own emissions reduction credits (ERC), the emissions increases of NOx and POC from S-51 and S-52 will be offset by the District's Small Facility Bank

The facility is not a Major Facility as defined in Regulation 2-6-212. Therefore, the increase in PM10 and SO2 emissions are not required to be offset.

### **NSPS (New Source Performance Standards)**

Pursuant to Section 60.4200(a)(2)(i), S-51 and S-52 are subject to 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines because their construction will commence after July 11, 2005 and the engines were manufactured after April 1, 2006 and are not fire pump engines.

Each engine has a total displacement of 78.1 liters and has 16 cylinders, so each cylinder has a displacement of less than 10 liters. Each engine is 2013 model year engine and is not a fire pump. Section 60.4205(b) requires these engines to comply with the emission standards in Section 60.4202(a)(2), which refers to 40 CFR 89.112 and 40 CFR 89.113 for all pollutants. Table 5 summarizes emission standards found in 40 CFR 89.112 (a) that apply to S-51 and S-52.

**Table 5: Emission standards found in Table 1 of 40 CFR 89.112  
For Engines > 560 kW**

Tier #	Model Year	NOx g/kW-hr (g/bhp-hr)	HC g/kW-hr (g/bhp-hr)	NMHC + NOx g/kW-hr (g/bhp-hr)	CO g/kW-hr (g/bhp-hr)	PM g/kW-hr (g/bhp-hr)
Tier 1	2000	9.2 (6.7)	1.3 (0.97)	-	11.4 (8.5)	0.54 (0.4)
Tier 2	2006	-	-	6.4 (4.8)	3.5 (2.6)	0.20 (0.15)

According to EPA Certification #: DCPXL78.1NZS-027 and as shown in Table 1, the engines will comply with the emissions standards in NSPS IIII.

40 CFR 89.113 (a) sets forth the following smoke emission standards for non-road CI engines:

- 20% opacity during acceleration mode
- 15% opacity during lugging mode
- 50% opacity during peaks in acceleration or lugging mode

The smoke emissions standards in 40 CFR 89.113, it appears, apply to mobile (and not stationary) non-road CI engines. Therefore, S-51 and S-52 are not subject to the above standards. Instead, S-51 and S-52 are subject to the opacity standards in Regulation 6, Rule 1, which is discussed in the later sections of this report.

Per 40 CFR 60.4207(b), S-51 and S-52 are subject to the following diesel fuel requirements in 40 CFR 80.510(c):

- Sulfur content  $\leq$  15 ppm maximum
- Minimum Cetane index = 40 or maximum aromatic content of 35% by volume

S-51 and S-52 will comply with this requirement because CARB diesel sold in California meets the above standards.

S-51 and S-52 are subject to Section 60.4209, which requires installation of non-resettable hour meter on the engine and a backpressure monitor on DPF. The owner/operator is expected to comply with this requirement, because the requirement will be incorporated in the permit condition.

S-51 and S-52 will comply with the requirements of Section 60.4211(c) because they have been certified in accordance with 40 CFR Part 89.

The engines will comply with the requirement in Section 60.4211(f) to run for less than 100 hours per year for maintenance checks and readiness testing, and the prohibition of running for any reason other than emergency operation, maintenance, and testing because the engines are limited by permit condition to 50 hours per year for reliability testing and otherwise may only operate for emergencies.

Performance tests in accordance with Section 60.4212 or 60.4213 are not required because the displacement of S-51 and S-52 is less than 30 liters per cylinder and the engine is certified by EPA and if the owner/operator maintains the engine as required by 40 CFR 60.4211.

Section 60.4214(b) states that owners/operators do not have to submit an initial notification to EPA for emergency engines.

Because the engines will have DPF, the owner/operator is subject to Section 60.4214(c) which requires them to keep records of any corrective action taken after the backpressure monitor has notified the owner/operator that the high backpressure limit of the engine is approached. This requirement shall be incorporated in the permit condition and so the owner/operator is expected to comply with this requirement.

The owner/operator is required to comply with certain sections of 40 CFR 60, Subpart A, General Provisions. The owner/operator is expected to comply with this requirement.

#### **NESHAP (National Emission Standards for Hazardous Air Pollutants)**

Pursuant to 40 CFR Section 63.6585(c), S-51 and S-52 are subject to the emissions and/or operating limitations in 40 CFR 63 Subpart ZZZZ (MACT ZZZZ) National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines, because S-51 and S-52 will be operated (located) at an area source of HAP emissions. Pursuant to 40 CFR Section 63.6590(a)(2)(iii), S-51 and S-52 are new stationary RICE because their construction (installation) will commence on or after June 12, 2006.

Per NESAHP 40 CFR Section 63.6590(c)(1), a new or reconstructed stationary RICE, such as S-51 and S-52, is required to meet the requirements in MACT ZZZZ by meeting the requirements in NSPS IIII. S-51 and S-52 are subject to Regulations under 40 CFR Part 60 (NSPS IIII) and no further requirements apply for such engines under MACT regulations. As previously discussed, S-51 and S-52 comply with NSPS IIII. Therefore, S-51 and S-52 comply with NESHAP by meeting the requirements under NSPS IIII.

#### **CARB Stationary Diesel Engine ATCM**

The May 19, 2011 amendments to the CARB's Airborne Toxic Control Measure (ATCM) harmonized the emission standards and certification requirements for new stationary emergency standby diesel engines greater than 50 BHP with the federal New Source Performance Standards for Stationary CI Internal Combustion Engines contained in 40 CFR § 60.4202. S-51 and S-52 are EPA certified diesel engines. Table 6 compares S-51's and S-52's EPA-certified emission rates to the applicable emission standards contained in Table 1 of the ATCM Section 93115 for 2008+ model year engines. This engine is subject to the Current off-road CI engine standards for HC, NO<sub>x</sub>, NMHC+NO<sub>x</sub> and CO. As shown in the Table 6, the engine meets ATCM requirements.

**Table 6 ATCM Emission Standard Compliance**

	Emissions from S-51/ S-52 g/bhp-hr	ATCM Standard g/bhp-hr
NMHC+NO <sub>x</sub>	4.0	4.8
CO	0.7	2.6
PM	0.09	0.15

#### **STATEMENT OF COMPLIANCE**

S-51 and S-52 are subject to Regulation 6, Rule 1 ("Particulate Matter – General Requirements "). Regulation 6-1-301 limits visible emissions from any source to Ringelmann No. 1. Regulation 6-1-302 limits emissions from any source to 20% opacity. Regulation 6-1-305 prohibits emissions of visible particles on real property other than that of the person responsible for the emission. S-51 and S-52 are not expected to produce visible emissions or fallout in violation of this regulation and will be assumed to be in compliance with Regulation 6-1. Compliance with the above visible emissions and opacity limit will be confirmed by the District's Compliance & Enforcement staff during their routine inspections.

S-51 and S-52 are subject to SO<sub>2</sub> limitations in Regulation 9, Rule 1 ("Inorganic Gaseous Pollutants – Sulfur Dioxide"). Regulation 9-1-301 limits the ground level concentrations of SO<sub>2</sub> to 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours. Regulation 9-1-302 prohibits a person from emitting from any source a gas stream containing sulfur dioxide in

excess of 300 ppm (dry). Regulation 9-1-304 prohibits a person from burning any liquid fuel having sulfur content in excess of 0.5% by weight. Compliance with Regulation 9-1 is very likely since diesel fuel with a 0.0015% by weight sulfur is mandated for use in California. Because SO<sub>2</sub> emissions from S-51 and S-52 are negligible, it is unlikely the APCO will require Bayer to conduct ground level monitoring.

S-51 and S-52 will be operated as emergency standby engines and therefore, are not subject to the emission rate limits in Regulation 9, Rule 8 ("Inorganic Gaseous Pollutants – NO<sub>x</sub> and CO from Stationary Internal Combustion Engines"). S-51 and S-52 are exempt from the requirements of Sections 9-8-301 through 305, 501 and 503 per Reg. 9-8-110.5 (Emergency Standby Engines). S-51 and S-52 are subject to and is expected to comply with 9-8-330.3 (Emergency Standby Engines, Hours of Operation) since non-emergency hours of operation will be limited in the permit conditions to 50 hours per year. S-51 and S-52 are also subject to and is expected to comply with monitoring and record keeping requirements of Regulations 9-8-502.1 and 9-8-530, which are incorporated into the proposed permit conditions.

This application is considered to be ministerial under the District's Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 2.3.1.

The operation of S-51 and S-52 will not trigger a PSD review.

S-51 and S-52 are is located less than 1,000 feet from the nearest K-12 school and are therefore, subject to the public notification requirements of Regulation 2-1-412. A public notice will be prepared and sent to all addresses within 1,000 feet of S-51 and S-52 and to the parents and guardians of students of the following school(s):

Ecole Bilingue de Berkeley Middle School  
901 Grayson Street, Berkeley, CA, 94710

Global Montessori International School  
2830 9th Street, Berkeley, CA, 94710

All comments received shall be summarized in final evaluation report.

**PERMIT CONDITIONS**

COND# 22850 -----

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related testing.  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
  
2. The owner/operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, State or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, State or Federal emission limits is not limited.  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
  
3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
  
4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.
  - a. Hours of operation for reliability-related activities (maintenance and testing).
  - b. Hours of operation for emission testing to show compliance with emission limits.
  - c. Hours of operation (emergency).
  - d. For each emergency, the nature of the emergency condition.
  - e. Fuel usage for each engine(s).
 [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
  
5. At School and Near-School Operation:  
If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:  
The owner/operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:
  - a. Whenever there is a school sponsored activity (if the engine is located on school grounds)
  - b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session.

"School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, athletic field, or other areas of school property but does not include unimproved school property.  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

***End of Conditions***

COND# 24354 -----

1. The owner/operator shall abate the particulate emissions from the emergency diesel engine with a Diesel Particulate Filter at all times the engine is in operation.  
[Basis: "ATCM for Stationary Compression Ignition Engines" Section 93115.6(a)(3) or 93115.6(b)(3), Title 17, CA Code of Regulations]
  
2. The owner/operator shall install and maintain a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached. The owner/operator shall maintain records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit).  
[Basis: "ATCM for Stationary Compression Ignition Engines" Section 93115.10(d), Title 17, CA Code of Regulations; 40 CFR 60.4214c]

*End of Conditions*

DRAFT



**RECOMMENDATION**

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct for the equipment listed below. However, the proposed sources will be located within 1,000 feet of at least one school, which triggers the public notification requirements of Regulation 2-1-412. After the comments are received and reviewed, the District will make a final determination on the permit.

I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance of an Authority to Construct and/or a Permit to Operate for the following equipment:

- S-51    Emergency/standby diesel engine-generator set,  
Caterpillar; Model 3516C; Model Year 2013;  
Engine Family DCPXL78.1NZS; EPA Tier 2;  
EPA Certification # DCPXL78.1NZS-027;  
78.1 L; 2937 BHP; 18.9 MMBTU/hr; 16 Cylinders;  
Abated by A-1**
- S-52    Emergency/standby diesel engine-generator set,  
Caterpillar; Model 3516C; Model Year 2013;  
Engine Family DCPXL78.1NZS; EPA Tier 2;  
EPA Certification # DCPXL78.1NZS-027;  
78.1 L; 2937 BHP; 18.9 MMBTU/hr; 16 Cylinders;  
Abated by A-2**
- A-1    Hybrid Diesel Particulate Filter/Oxidation Catalyst System  
Rypos HDPF/C,  
CARB-verified, CARB Executive Order DE-07-001-05  
Family Name CA/RYP/2007/PM3+/N00/ST/DPF01**
- A-2    Hybrid Diesel Particulate Filter/Oxidation Catalyst System  
Rypos HDPF/C,  
CARB-verified, CARB Executive Order DE-07-001-05  
Family Name CA/RYP/2007/PM3+/N00/ST/DPF01**

---

Snigdha Mehta  
Air Quality Engineer I  
Engineering Division