

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Energy and Environment

CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM

TO: Stephen S. Ours, P.E.
Chief, Permitting

FROM: John Nwoke
Environmental Engineer

SUBJECT: **The U.S. Naval Research Laboratory
Building 49 Dust Collector
Permit No. 7354 to Construct and Operate a New Dust Collector**

DATE: May 28, 2024

BACKGROUND INFORMATION

On June 28, 2023, the Air Quality Division (AQD) received an air permit application from the U.S. Naval Research Laboratory (NRL) to construct and operate a new dust collector at Building 49 at NRL's 4555 Overlook Avenue SW facility. The dust collector is a Donaldson Torit Unimaster® UMA 450 dust collector, designated B49-DstCol, which will complement dust collection in Building B49.

The dust collector will be used to support woodworking activities alongside existing dust collectors in the facility. This dust collector, as with the existing dust collectors are vented outside, necessitating a construction and operating permit. Previously existing dust collectors are included in the Title V permit as miscellaneous activities.

NRL has not requested that any portions of the application be held confidential.

TECHNICAL INFORMATION

NRL applied for a permit to construct and operate a new dust collector, which will replace an existing old dust collector at the facility. The new dust collector is a Donaldson Torit Unimaster® UMA 450 dust collector, designated B49-DstCol. The unit is an intermittent-duty, collector with bag-style filters.

Filter bag cleaning occurs using a shaker system. When the fan is turned off and the appropriate fan run-down time is complete, a solid state timer automatically starts the cleaning sequence, which consists of operation of a vibrator (shaker) for a preset amount of time. The shaker shakes the filter bags which causes the particulate matter to fall to the bottom of the unit, and into the collection barrel. NRL applied for a construction and operation permit to allow the replacement of the existing old dust collector, thereby ensuring continued environmentally sustainable woodworking operations.

CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM

U.S. Naval Research Laboratory

Permit No. 7354 to Construct and Operate a Dust Collector at Building B49

May 28, 2024

Page 2

Emission Evaluation

To estimate emissions conservatively, it was assumed that 85% of PM comes from PM₁₀, and that PM_{2.5} is equivalent to PM₁₀. In computing the worst-case particulate matter emissions, it was assumed that woodworking operation will occur for eight (8) hours per day and 365 days per year, resulting in 2,920 hours of woodworking operations in a calendar year. The table below shows the estimated emissions from the woodworking activities. It is very difficult to estimate emissions from woodworking operations due to their sporadic nature and a limited amount of emission factor data (no appropriate factor is included in AP-42). As such, AQD back-calculated the emissions based on emission control guarantee from the equipment vendor of 0.005 grains per dry standard cubic foot of air which compares favorably with the allowable emissions level of 0.03 grains per dry standard cubic foot of exhaust gas in 20 DCMR 603. It is likely that this estimate significantly overestimates eventual actual emissions.

Table 1: Estimated Maximum Emissions from Dust Collector

Pollutant	Dust Collector Maximum Emissions	
	lb/hr	tons/yr
Total Suspended Particulate Matter (TSP)	0.085	0.12

REGULATORY REVIEW

20 DCMR Chapter 2, Section 200: General Permit Requirements

As noted in the background section of this technical memorandum, the dust collector is vented outside, necessitating the need for a construction and operating permit. The provisions of this section are applicable to the dust collector as a stationary source of air pollution. A permit is therefore required for the construction and operation of the unit pursuant to 20 DCMR 200.1 and 200.2. Operation permits are valid for five years. Upon expiration, they may be renewed to allow for the continued operation of the permitted activity. It is expected that the requirements of the resulting Chapter 2 permit will be incorporated into a Title V major source operating permit before renewal of this separate permit to construct and operate expires.

20 DCMR Chapter 2, Section 204: Permit Requirements for Sources Affecting Non-Attainment Areas

The review of the Chapter 2 permit application indicated that the proposed equipment would not emit any pollutants other than particulate matter. The District is currently classified as in attainment with all particulate matter standards, thus this regulation would not apply. Even should the District be reclassified as non-attainment, the estimated potential to emit particulate matter is far below any “significant” thresholds in the District or related federal regulations.

Prevention of Significant Deterioration (PSD) (Federal program)

The project will have a potential to emit (PTE) of less than 250 tpy for all pollutants, thus this project is not subject to the PSD program (implemented by EPA).

CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM

U.S. Naval Research Laboratory

Permit No. 7354 to Construct and Operate a Dust Collector at Building B49

May 28, 2024

Page 3

20 DCMR Chapter 2, Section 205: New Source Performance Standards

20 DCMR 205.2 adopts many of the federal New Source Performance Standards (NSPS) as in effect on July 29, 2021. Additionally, in order to be sufficiently protective of public health pursuant to 20 DCMR 201, the Department places all current NSPS standards, if applicable, into all Chapter 2 permits issued. However, there are no applicable NSPS requirements for the dust collector as a control device. Hence, no NSPS requirements are contained in the permit.

20 DCMR Chapter 2, Section 209: Permit Requirements for Non-Major Stationary Sources (Minor New Source Review)

The emissions of PM10 (and PM2.5) are expected to be less than 5 tons per year. As such, this section is not applicable.

20 DCMR Chapter 3: Operating Permits and Acid Rain Programs

The project is not subject to the Acid Rain Program. However, the equipment will be part of a larger facility subject to the major source operating permit program of 20 DCMR Chapter 3. As such, pursuant to 20 DCMR 301.1(a)(2), the facility must apply for the requirements of this permit to be placed into its existing Title V operating permit. This requirement is contained in Condition I(g) of the proposed permit.

20 DCMR Chapter 5: Testing, Monitoring and Record keeping Requirements

Testing, monitoring, and record keeping requirements, pursuant to 20 DCMR 201, 20 DCMR 500.8, and 20 DCMR 502.1, respectively, have been included in the permit documents under Condition IV and Condition V.

20 DCMR Chapter 6: Particulates

20 DCMR 603 is applicable to this dust control equipment, thus its requirements have been included. Note, however, that Appendix 6-1 cannot be reasonably applied in the case of a woodworking shop. The requirements apply on a "process weight per hour" basis. Based on the definition of "process weight" in 20 DCMR 199, the weight in question would be the weight of the wood materials being worked. However, in reality, there is no relationship between the weight of a wood object and the amount of sawdust produced from working it. For example, cutting across a "2x4" will produce the same amount of sawdust whether the "2x4" section is one foot long or eight feet long, while there would be an 8-fold difference in weight between the two "materials" being worked. As such, only the default 0.03 gr/dscf standard in 20 DCMR 603.1 is being applied. Because the vendor guarantees a filter performance efficiency greater than 99.9%, operator of the unit can expect the outlet emissions of dust to be under 0.005 grains per dry standard cubic foot when the equipment is properly operated.

20 DCMR 606 is also applicable under the new visible emission regulations, updated August 11, 2023. The applicable visible emissions provisions of 20 DCMR 606.1 and the relevant exceptions of 20 DCMR 606.2 and 20 DCMR 606.6 are included in Condition II(d).

Additionally, the maintenance and operating requirements of 20 DCMR 606.4(a) and (b) are found in Condition III(c), while the training requirement of 20 DCMR 606.4(c) are found in Condition III(f). The requirement to investigate malfunctions of 20 DCMR 606.5(b) is found in

CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM

U.S. Naval Research Laboratory

Permit No. 7354 to Construct and Operate a Dust Collector at Building B49

May 28, 2024

Page 4

Condition IV(i). The record keeping requirements of 20 DCMR 606.5(a) are found in Condition V(a)(7) and the records of training to comply with Condition III(f) are found in Condition V(a)(12).

20 DCMR Chapter 9, Section 903: Odorous or Other Nuisance Air Pollutants

It is not expected that the work working operations will cause nuisance odors, however the requirements of 20 DCMR 903.1 apply to all sources. Specifically, “An emission into the atmosphere of odorous or other air pollutants from any source in any quantity and of any characteristic, and duration which is, or is likely to be injurious to the public health or welfare, or which interferes with the reasonable enjoyment of life or property is prohibited.” This requirement is found in Condition II(c) of the permit. Additionally, the affirmative defense provisions of 20 DCMR 903.13(b) are also applicable and also found in Condition II(c).

Other Regulations

Compliance Assurance Monitoring (CAM) (40 CFR 64)

The project is not subject to this Part because the pre-control emissions of particulate matter from the source is less than the major source threshold of 100 tons per year.

RECOMMENDATIONS

The draft renewal permit will be published in the D.C. Register and on the Department’s website on June 7, 2024 for a thirty-day public comment period, ending July 8, 2024.

Based on AQD’s evaluation, the proposed project and draft permit comply with all applicable federal and District air pollution control laws and regulations. I recommend that the attached permit be issued promptly following the completion of the public review period if no comments are received. If comments are received, they will be addressed before any final action is taken on the permit application.

SSO/JCN