

Operating and Maintaining Baghouses

Northwest Clean Air Agency (NWCAA) regulations limit particulate / dust emissions from commercial and industrial sources. To reduce particulate pollution, NWCAA may require control devices for the sources that emit particulate (e.g., wood processing, plasma / laser cutting, grain / feed processing, etc.). Common particulate control devices are filtered dust collection devices such as baghouses.



Baghouses

Baghouses are efficient particulate collection devices comprised of fabric filter cartridges or bags shaped like tube socks that fit over similarly shaped wire frames that hang inside metal enclosures. A baghouse system filters out particulate from the exhaust streams. Particulate is captured on the outside of the fabric filter while cleaner air passes through and exits the housing. The particulate that accumulates on the outside of the fabric filters are removed via a cleaning mechanism (e.g., shaking, reverse jet air pulse) and collected in a hopper for proper disposal or reuse.

Permits

Sources with a potential-to-emit (i.e., estimates based on operating 8760 hours annually) uncontrolled particulate emissions in the size range of 2.5 microns or greater totaling more than 0.5 tons per year, or in the size range of 10 microns or greater totaling more than 0.75 tons per year, must obtain a permit before construction / installation begins. Permits list requirements that must be followed to ensure clean air rules are met and equipment is operated and maintained in good working order to reduce particulate emissions throughout the useful life of the equipment. This can include meeting a minimum stack height, filtration specifications, performing monitoring of operating parameter and taking corrective action if parameters exceed recommended range(s), restrictions on the amount of visible emissions allowed from the stack, following manufacturer recommended maintenance procedures / schedules and record keeping.

Registration

Independent of permitting, certain existing and new sources of air pollution throughout Island, Skagit, and Whatcom counties must register with NWCAA and are subject to annual reporting of air emissions data, an annual registration fee, and routine compliance inspections. The registration program enables NWCAA to maintain an inventory of air contaminants which can be used to evaluate air pollution control strategies to attain and maintain National Ambient Air Quality Standards.

Inspections

NWCAA routinely performs inspections at registered sources to verify compliance with both permits and general clean air rules. Inspection frequency may vary depending on agency resources and priorities. Inspections may also result from citizen complaints.

Self-Inspections

Problems with your baghouse can increase particulate emissions and can lead to clean air violations. Baghouses must be kept in good working condition to effectively collect particulate. Inspecting baghouses on a regular schedule (e.g., weekly or monthly) and performing manufacturer recommended preventative maintenance can help prevent problems, such as equipment malfunctions and increased emissions. A good rule of thumb is that if you can see anything coming out of your baghouse stack, your baghouse is not working properly. And don't just focus on the stack when looking for leaks. Leaks can occur in the ducting leading to the baghouse itself or around the fan housing – anywhere turbulent airflow may cause an abrasion resulting in a hole. These holes start small, but the accumulation of fine dust where there should be none gives away the presence of the leak – one that will continue to grow until it is addressed. Another potential source of leaks is plugging/blockages where collected dust is no longer "moving" through the system, eventually causing a failure or rupture and dust blowing out of the collection system. NWCAA encourages you to use the Baghouse Inspection Checklist at the end of this fact sheet to help determine if your baghouse is operating at its maximum efficiency. Utilizing the provided checklist, or one you've created yourself, to conduct regular inspections will help you reduce particulate emissions and stay in compliance.

Black-Light Leak Testing

Black-Light Leak Testing is the process of checking your baghouse using a neon powder called "leak detection powder" and a black light. This test is done by pouring a predetermined amount of leak detection powder into the intake manifold and examining the upper chamber with a blacklight to see if any of the neon leak detection powder escaped through the dirty air chamber into the clean air chamber. This test is commonly performed when leaks are suspected and directly following the replacement of bags to ensure they are seated properly and are free of rips and tears.

Electronic Leak-Detection Systems

Electronic Leak-Detection Alarms notify operators of leaks by measuring the static electricity generated by dust particles colliding with a metal probe located in the clean exhaust airstream. These devices are highly sensitive and draw attention to leaks far before they can be seen with the naked eye or cause a serious nuisance from deposition of dust on adjacent property.

Records

It is important that you keep a record of all maintenance activities performed, demonstrating proper care of your baghouse. This should include tracking bag replacements along with any other maintenance that has been done to the unit. NWCAA will often ask to review records for the past 3-5 years to verify the baghouse is being properly operated and maintained.

Breakdowns

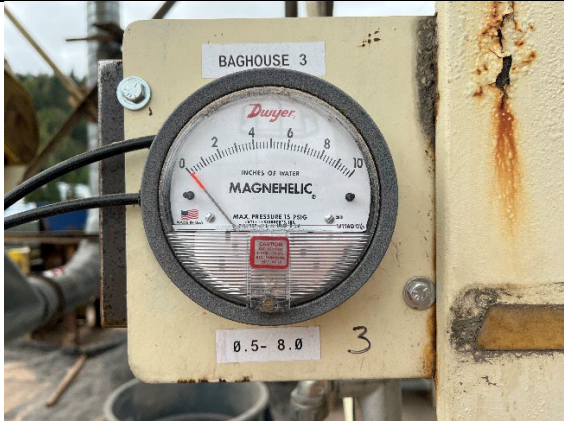
If your baghouse unit breaks down, operations must typically cease until the baghouse is properly repaired.




Questions?

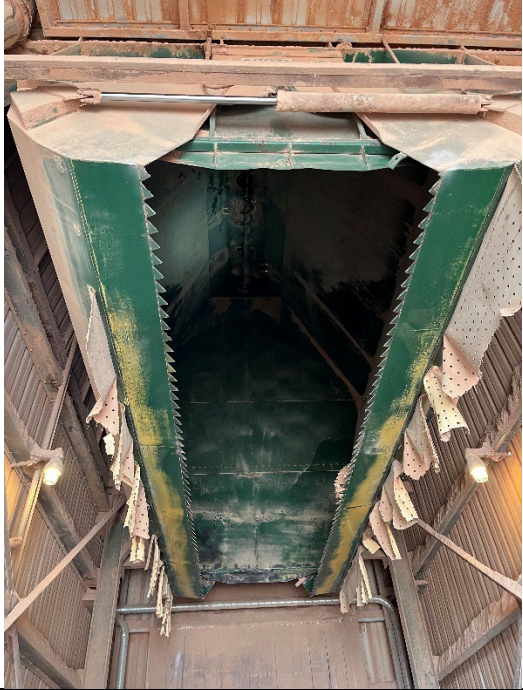
Don't hesitate to reach out to Northwest Clean Air Agency at (360) 428-1617.

Baghouse Inspection Checklist

Date/time of inspection: _____ / _____ Name: _____

Activity	Meets Standards	Below Standards	Corrective Actions Taken if Below Standards
1. Ductwork: - Were ducts checked and free of visible leaks?			
2. Temperature: - Was temperature checked and determined to be within safe operating limits? (Hot air can damage bags; cold air may be an indicator of leaks or condensation within the bags and can also result in bridging/plugging.)			
3. Damper Valves: - Are all isolation, bypass and cleaning valves checked and working properly? (Sealed tightly, gaps/leaks allow air into the system and reduce collection efficiency, increase visible emissions)			
4. Pressure Differential Gauge: - Is the pressure differential gauge calibrated correctly? (i.e., a monometer should read "zero" before equipment is on) - Check and record pressure drop across bags - Does pressure drop within operating limits? (Too high may indicate clogged bags and improper cleaning; too low may indicate holes in the bags or over cleaning/reduced collection efficiency)			

Activity	Meets Standards	Below Standards	Corrective Actions Taken if Below Standards
<p>5. Bags:</p> <ul style="list-style-type: none"> - Are bags properly seated and fastened? Pulse jet must have adequate tension. (Consider utilizing leak detection powder after replacing bags) - Are bags free of tears, holes, or abrasions? - Are replacement bags on hand? - Do you have a preventative maintenance bag replacement schedule? 			
<p>6. Bag Cleaning Controls:</p> <ul style="list-style-type: none"> - Are proper cleaning, sequence and cycle times being used? - Are compressed air lines or shakers working properly? 			
<p>7. Fan:</p> <ul style="list-style-type: none"> - Is static pressure of the fan within normal range? 			
<p>8. Stack:</p> <ul style="list-style-type: none"> - Is particulate visible in the baghouse exhaust? (Particulate matter should not be visible) 			

Activity	Meets Standards	Below Standards	Corrective Actions Taken if Below Standards
<p>9. Hoppers:</p> <ul style="list-style-type: none"> - Are hoppers in proper working order? (Not overflowing, bridging or plugging) - Are the hopper viewing doors/hatches closed? - Are the feeders working properly? 			
<p>10. Fugitive Emissions:</p> <ul style="list-style-type: none"> - Are there any visible leaks exiting the baghouse? - Is the area around the hopper bin free or debris and particles? 			