

Alternate Daily Cover for Municipal Solid Waste Landfills

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Waste & Materials Management
P. O. Box 7921
Madison, WI 53707-7921

Purpose

This document is intended to be used as a technical reference by the Waste and Materials Management Program plan review staff for the inspection and approval of alternative daily cover (ADC) materials at municipal solid waste landfills.

Regulatory Requirement for Daily Cover

Section NR 506.05, Wis. Adm. Code, requires that all solid waste disposed in a municipal solid waste landfill be compacted and covered at the end of each operating day with a compacted layer of at least 6 inches of soil. Alternate daily cover materials may be approved or mandated by the Department of Natural Resources as required in s. NR 506.055. The landfill must receive written approval from the DNR prior to use of an ADC. Subparagraphs 1. (a) through (d) of s. NR 506.055 outlines information needed to request use as an ADC. Section NR 538.10(4) contains further requirements for industrial byproducts used as alternate daily cover. Listed or characteristic hazardous waste shall not be used as daily cover.

Regulatory Requirement for Daily Cover

Daily cover serves many purposes at municipal solid waste landfills. It is used to:

- control the spread of disease vectors;
- prevent fire hazards;
- control odors;
- prevent blowing litter;
- prevent scavenging;
- minimize aesthetic problems;
- minimize dust generation and movement; and
- in some cases provide a suitable surface for vehicular traffic.

Technical Considerations – ADC Materials

The following are technical considerations for various materials that have been approved for use as ADC or there may be interest in using the materials as ADC. This is not a complete listing of all ADC materials that have been approved for use or may be approved for use in the future. Some of these materials have not been approved or used in Wisconsin. The technical considerations are presented as information only for DNR staff who may encounter these materials during plan review or inspection. The information is not intended to imply DNR recommendation of any particular ADC material.

ADC Material Type	Description	Considerations/Potential Issues
Spray-on Slurry Cover Systems	<p>Slurry or emulsion spray-on ADC materials applied to the working face using towed or skid-mounted application equipment, similar to hydroseeders, but specifically designed for landfill ADC applications. Common spray-on cover materials:</p> <ul style="list-style-type: none"> • ConCover – a blend of polymers and recycled fiber, e.g. newspaper. ConCover is mixed with liquid to create slurry that is sprayed on the waste. Common trade names are ConCover, ConCover 180, and ProGuard SB. • Topcoat – manufactured from post-consumer paper, chemicals and other proprietary ingredients. Like ConCover it is mixed on site and sprayed as slurry. • Posi-Shell – spray applied, cement mortar coating, similar to stucco. A cement-like mineral binder reinforced with structural composite fibers. <p>Spray-on materials are typically mixed with water; however, guidance and manufacturer’s literature also suggests some materials may be mixed with leachate. The Minnesota Pollution Control Agency (MPCA) has determined that mixing commercial spray-on cover materials with latex paint is also an acceptable ADC.</p>	<ul style="list-style-type: none"> • <u>Inadequate application</u> tends to be a concern. Effectiveness depends on complete and continuous application onto the waste. • Operator training is required for proper mixing, application and use. • Operators are encouraged to keep a log on a per batch basis that identifies the amount of product used, the amount and type of liquid used to make up the batch, the area covered and the numbers of days that this area was covered by the batch. • Available information varies with respect to impacts of wind, rain, and extreme cold temperatures on the application and use of spray-on ADC materials. In general, spray-on ADC should not be applied during rain events and must set up prior to rainfall. Under windy conditions spray-on material becomes difficult to place. • An acceptable length of time for spray-on material depends on material type, thickness and adequate application. In general, these materials are limited to short term use. MPCA guidance limits spray-on materials to 48 hours before soil cover is required unless specifically approved. EPA guidance indicates average cover duration may range from 3 days to 3 months depending on material type. ASTM D 6523-00 indicates life expectancy up to 14 days for some materials. • The use of leachate in the slurry mixture may present additional worker health and safety issues. The use of leachate in spray-on cover systems has not been tested or approved in Wisconsin at this time. The landfill owner/operator would be responsible for employee safety and evaluating risks associated with its use. The facility would need to comply with an appropriate OSHA health and safety plan. • Materials should be tested per ASTM D 4982 for combustibility. • Permeation test, ASTM E 96 is suggested to evaluate odor control. Water vapor loss through the ADC should be less than 3,000 g/m²/day.
Spray Applied Foams	<p>Foam ADCs are applied to the working face of sanitary landfills using foam generation and application equipment specifically designed for that particular foam. There are both hardening and non-hardening foams. These foams are effectively broken up by the placement of additional wastes on the next operating day. Non-hardening foams discourage insects and birds from landing and rodents from digging. An example of a non-hardening foam is the Soil Equivalent Foam from Rusmar, Inc.</p>	<ul style="list-style-type: none"> • Uniform coverage is key. • Life expectancy varies according to type of foam. ASTM D6523-00 indicates some last 15-20 hours while others last from 3-7 days. • Some materials are not recommended for use during rain. Others can withstand drizzle/light rain or light to moderate rainfall. Information was not readily available with respect to snowfall, but the ASTM guidance indicates it can be applied under freezing conditions if equipment is protected.

ADC Material Type	Description	Considerations/Potential Issues
<p>Reusable Geosynthetics (Tarps)</p>	<p>Reusable geosynthetic ADCs consist of various types of geotextiles that have either been developed or adapted for use as a daily cover material. Panels fabricated from these materials are placed over the working face at the end of the day, and retrieved prior to the start of the next operating day. Landfills may use standard landfill equipment or special mechanized equipment to place and retrieve panels. Tires, sandbags, or ballast soil are placed along the edges to anchor the panels.</p> <p>Specifications vary, depending on the strength, number of layers, seam style, etc. Operators usually develop empirical knowledge of how long a tarp can be used before it should be discarded. Reinforced seams and grommets may be added to resist tearing.</p>	<ul style="list-style-type: none"> • Preparation of the working face prior to placement of a panel and care taken during placement can significantly affect the life of a panel. • Increased panel weight makes placement and retrieval more difficult and increases risk of damage. • Tarps that are too thin may tear easily. Tarps must be repaired or replaced if they no longer provide effective coverage due to tears or holes. Tarps with minor tears or holes may still function effectively. • The impact of wind on the placement of the panel is dependent upon weight of the panel, size of the panel and equipment used to deploy the panel. • Tarps need to be secured upon placement to prevent uplift. • Tarps are usually not used when snow is predicted. Snow removal is required prior to retrieving panels from the working face. • Reusable geosynthetic panels trap odors and other emissions while in place, but odors can be released when panels are retrieved. • Effectively controls litter as long as panels completely cover the working face. • This may be a cost effective option for landfills lacking soil or other ADC materials. [Note: Tarps do not consume airspace within the landfill.] • Woven geotextiles appear to be more commonly used than non-woven geotextiles. Woven geotextiles have been successfully used as ADC in Wisconsin landfills.
<p>Nonreusable (disposable) Geosynthetics</p>	<p>Non-reusable geosynthetic ADCs consist of less durable disposable films or fabrics intended to be left in place without retrieval. Special equipment also exists to facilitate the placement and anchoring of these materials to cover the working face of landfills. The cover may contain pro-degradant additives to accelerate its decomposition after burial within the waste to allow fluid flow.</p> <ul style="list-style-type: none"> • Enviro Cover is a film type ADC tarp manufactured by EPI Environmental Products, Inc. It is degradable and can be left in place after each use. 	<ul style="list-style-type: none"> • Similar considerations as reusable geosynthetics. • If nonreusable geosynthetics contain pro-degradant additives the barrier-to-infiltration function in the top layers gives way within the landfill to allow free fluid movement. Without pro-degradant additives, nonreusable geosynthetics can interfere with both landfill gas and leachate movement. Unintended side slope seepages, for example, may occur. Based on this information, it may be appropriate to approve only on a trial basis until experience with the material is gained. Monitoring for leachate seeps should be required.

ADC Material Type	Description	Considerations/Potential Issues
Contaminated Soil	<p>Untreated petroleum contaminated soil and soils resulting from remediation may be used as ADC with Department approval and in accordance with NR 506.105.</p> <p>Treated petroleum contaminated soil may also be used as ADC. Both processing and landfill plans of operation should specify the maximum DRO and GRO concentrations for treated soil to be used as ADC. Refer to NR 506.105 for maximum concentrations that can be accepted into the landfill.</p> <p>Contaminated soil approved for disposal in a MSW landfill through a “contained out” determination made in accordance with Guidance for Hazardous Waste Remediation (RR-705) [PDF] may not be used as daily cover.</p>	<ul style="list-style-type: none"> Contaminated soils resulting from remediation actions require coordination with the Remediation & Redevelopment (R&R) program prior to approving these materials for use as ADC. Each source of contaminated soils must be approved for use as ADC, unless a plan for screening soils for use as ADC is included in the special waste acceptance plan. Biopile processing requires approval under NR 502.08. Use as ADC must comply with the processing plan of operation approval. Must comply with NR 506.105. Must comply with landfill’s special waste acceptance plan requirements for testing and be classified as non-hazardous. A minimum thickness of 6-inches is required. Fine-grained contaminated soil should be scarified or removed prior to placement of the next lift of waste to prevent low permeability layers within the landfill.
Foundry Sand	Spent foundry sands are generated by the metal casting industry. Heat and mechanical abrasion eventually render the sand unsuitable for use in casting molds, and a portion of the sand is continuously removed and replaced with virgin sand.	<ul style="list-style-type: none"> This material can become windblown under windy conditions. The foundry sand tends to crust over after exposure to water. A minimum thickness of 6-inches is required. 289.30(5), Stats., and NR 506.055 – Upon the request of a foundry operator, the Department must require a landfill operator to accept foundry sand for use as ADC if certain conditions are met. [Note - this has not happened since the statute was passed.]
Combustion (Boiler) Ash	<p>Ash is a by-product of coal combustion. Three types of ash are produced by burning coal at power plants:</p> <ul style="list-style-type: none"> Fly ash - a very fine powder material that is carried with the stack gases and is collected by electrostatic precipitators or a baghouse prior to exiting the stack. It exhibits cementitious and/or pozzolanic properties, which makes it useful in concrete and geotechnical construction applications. Bottom ash - much coarser than fly ash. It is an almost sand-like material that is sluiced from the bottom of the boilers. Flue-Gas Desulfurization (FGD) ash - a combination of fly ash and the material recovered from air pollution control systems that capture sulfur dioxide emissions. At this time the DNR does not recommend FGD ash be used as daily cover. <p>In some cases, sources of combustion ash may contain a combination of fly ash, bottom ash, or FGD ash.</p>	<ul style="list-style-type: none"> Fly ash may become windblown under windy conditions, so it is not a suitable ADC by itself. However, fly ash combined with bottom ash may provide a reasonable ADC and such mixtures could be approved on a trial basis, with appropriate monitoring to determine effectiveness and dusting potential. Bottom ash alone usually poses little dusting hazard. A minimum thickness of 6-inches is required. Tracking of ash out onto roads may be an issue, especially during wet weather conditions. Combustion ash approved for ADC should not exceed 15 percent by weight passing the No. 200 sieve, unless the ADC would be removed from the working face prior to placement of the next lift of solid waste. Analytical testing needs to be performed in accordance with the special waste plan.

ADC Material Type	Description	Considerations/Potential Issues
Paper Mill Sludge	<p>Papermill sludges that are a mix of paper fiber, microbial cell mass, clay, dirt, papermaking chemicals, and other contributions to the papermill wastewater stream. Primary papermill sludges may be more suitable for ADC due to having more granular material and a smaller proportion of cell mass. Higher moisture and cell mass contents make for less stable sludges that are also less desirable for use as ADC.</p> <p>The paper industry has generally improved its sludge handling processes and the material has become drier than in the past.</p>	<ul style="list-style-type: none"> • The physical and chemical characteristics of papermill sludge are very specific to the mill it is produced at and may require a trial period if there is no prior experience using that source as ADC. • Rainwater can decrease the effectiveness of paper mill sludge as ADC. • Inspections and reapplication may be needed following rain events or after the material has been left in place for an extended length of time. • Material must be tested for percent solids. Generally, the material should have > 40% solids to be used as ADC or it may not function effectively. • A minimum thickness of 6-inches is required. • In some cases, a crust may form and paper mill sludge may act as barrier layer between lifts. The material needs to be broken up, scarified or mixed in prior to placing a new lift of waste. • Paper mill sludge may cause odor problems. • If material is dry it can become dusty. Materials that are potentially dusty or likely to be windblown may not be used under windy conditions. • Frozen material should not be used as ADC. • The material must not contain free liquids.
Automobile Shredder Residue (ASR) or Shredder Fluff	<p>The shredding of automobiles results in a mixture of ferrous metal, non-ferrous metal (e.g., alloys of copper and aluminum) and shredder waste, called automotive shredder residue or automobile shredder residue (ASR). ASR consists of glass, fiber, rubber, automobile liquids, plastics, foam and dirt. ASR is sometimes differentiated into shredder light fraction and dust.</p>	<ul style="list-style-type: none"> • 289.30(5), Stats., and NR 506.055 – Upon request by a scrap dealer, the Department must require a landfill operator to accept auto shredder residue fluff for use as ADC if certain conditions are met. [Note - this has not happened since the statute was passed.] • Material can become windblown under windy conditions. • Dust and tracking may be an issue. • The material may contain lead, cadmium, mercury and PCB. Analytical testing is required to confirm material used as ADC is non-hazardous and does not contain PCBs > 50 mg/kg. • A minimum thickness of 6 inches is required. • The material can become caught in truck tires and tracked onto perimeter roads. • Shredder fluff does not seem to set up and may not need to be removed prior to placing additional waste over it.

ADC Material Type	Description	Considerations/Potential Issues
Processed Construction and Demolition Debris Screening Materials	Processed construction and demolition (C&D) debris screening materials refers to the finer residual materials (“unders”) produced from screening C&D during processing operations. A typical screen size is 2-inches.	<ul style="list-style-type: none"> • Gypsum wallboard within C&D can generate hydrogen sulfide (H₂S) gas. H₂S may cause detrimental effects, including the onset of odor problems, acid gas corrosion of the gas extraction system, increased sulfur emissions from the flare, and possible detrimental or fatal health consequences for workers and wildlife. • C&D fines should be dispersed as ADC or as waste rather than left in discrete monofills to limit the potential for H₂S gas generation. • May contain asbestos containing materials. • Dust may be a potential concern. • Testing for asbestos, grain size, organic content, sulfate and RCRA metals is recommended. • Need to specify maximum particle size. • Limited experience with C&D fines; recommend approving only on a trial basis.
Residual Crushed Glass	Residual crushed glass is a byproduct of processing (optical sorting or screening) recyclable glass. The product is generally not marketable as a recyclable material due to contaminants, size or other reasons.	<ul style="list-style-type: none"> • The size of the glass and amount of contaminants (trash, plastic, paper, food waste, etc.) can vary significantly between different processing operations. • Some residual glass materials may have odors due to the trash or food waste. • Some residual glass materials may contain significant amounts of shredded paper or other light materials that can become windblown. • A visual inspection of the material should be performed prior to approval. Materials with significant quantities of trash should not be approved as ADC. • Grain size analysis should be performed and evaluated prior to approval. • May need to specify maximum particle size. • Since glass containers (s. 287.07(4), Wis. Stats.) are prohibited from land disposal, the request for use of residual crushed glass as ADC must explain why the material is a waste product and not recyclable.
Processed cathode ray tube (CRT) glass	Processed CRT glass appears to have recently been approved for use as ADC in Illinois. The crushed CRT glass is treated by stabilizing the lead contained inside to prevent leaching.	<ul style="list-style-type: none"> • Treated CRT glass needs to be sampled and tested before any material is accepted at a landfill for use as ADC and for review by the Department prior to issuing an approval or modification. • Due to the varying amount of lead in CRTs, the generator and landfill needs to submit a continuous sampling and monitoring program to the department to ensure the CRT glass used as ADC is not hazardous. • CRT glass proposed for use as ADC within an MSW landfill cannot exceed the toxicity characteristic leaching procedure (TCLP) of 5 parts per million (ppm) for lead. If the crushed CRT glass has been treated to reduce TCLP lead levels to below 5 ppm, then the glass must also meet the land disposal requirement (LDR) of 0.75 ppm (TCLP) for lead.

In addition to the above considerations and potential issues, if a generator of industrial byproducts is participating in the Beneficial Use Program and wishes to claim the material was beneficially used as ADC then s. NR 538.10 (4), Wis. Adm. Code, also applies to the use of the material. This section requires that industrial byproducts used as landfill daily cover not contain more than 15% silt and clay sized materials (P200 content), and not be placed in layers greater than 6 inches thick. Foundry sand, coal ash, and papermill sludge are all included in the definition of industrial byproducts.

Approval of ADC Materials

The use of ADC materials requires a plan of operation or plan modification approval from the DNR. Expedited plan modification approvals may be issued in accordance with s. NR 514.09, Wis. Adm. Code. Expedited plan mods should be used only for materials with demonstrated and acceptable behavior listed in s. NR 514.09(1)(a)(3) & (4), Wis. Adm. Code. The list includes soil daily cover, foundry sand, bottom ash or papermill sludge. Also, if soil daily cover will be placed at the end of each operating week, then tarps, geotextiles, spray-on foams and similar alternative daily cover materials may be approved through an expedited plan of operation modification. However, the use of an expedited approval process limits the ability to place conditions on the use of the material; therefore, the formal plan of operation modification process may still be appropriate in certain cases. ADC materials beyond those listed in s. 514.09(1)(a)(3) & (4), Wis. Adm. Code, should be dealt with by a formal plan modification with suitable conditions unless the WMM program has accumulated enough experience with a particular ADC that we consider it generally approvable through an expedited plan modification and the plan modification request includes appropriate conditions for its use.

The recommended procedure for approving an ADC material on a trial basis is through a formal plan of operation modification with an expiration date or sunset period, commonly 3 to 6 months. The intent is to allow the operator and Department to obtain experience relating to performance of the ADC and define limitations or problems that weren't anticipated or were not provided in product literature. If the experience is not good, the sunset period sets a cutoff date without need for further DNR action. Operators choosing to seek longer term approval must reapply for a formal plan of operation modification, or an expedited plan mod if continued use of the material will not be subject to conditions beyond those in the trial period plan mod approval. The documented experience can be cited in findings of fact or serve as the basis for approval conditions in the approval. The initial trial approval may also include wording that the trial period may be extended upon written concurrence by the DNR; however, this should only be implemented by the DNR if the trial does not result in any new conditions or changes in the use of the material as ADC.

The following information needs to be included in the applicant's plan of operation or plan modification request for ADC in accordance with s. NR 506.055(1), Wis. Adm. Code.

- a) Type of material to be used, including its chemical and physical properties as required in s. NR 506.09, and, where applicable, a narrative describing the material's successful use at other solid waste landfills in controlling vectors, windblown material and odors. The description should include information about the process generating the waste proposed for use as ADC, and discuss how variable the characteristics of the waste are. The waste may need to be re-analyzed periodically if its characteristics vary with time.
- b) Method and rate of application.
- c) Conditions when alternate daily cover cannot be used, including but not limited to weather conditions, equipment breakdown, ability to obtain a sufficient quantity of ADC, maximum time ADC can be exposed, and back-up cover materials for use when alternative cover cannot be used.

- d) Storage of alternate cover material on-site prior to its use, includes measures to be taken to prevent contaminants to groundwater and surface water, and prevention of windblown nuisances. (This should include a narrative confirming there will not be excessive storage of ADC and the storage area(s)/volumes will not interfere with normal landfill operations.)
- e) Explanation of how the landfill will handle rejected ADC loads (if applicable). The protocol for rejected ADC materials should be consistent with the handling of any special waste that tests hazardous or contains PCBs greater than 50 ppm. Notification must be performed in accordance with s. NR 506.16(4), Wis. Adm.
- f) In addition to the above, the following information is also recommended, especially for new or trial applications:
 - The estimated amount of each source of material and the frequency of delivery (e.g., one time, seasonal, ongoing) to the landfill.
 - Anticipated performance under windy, wet and freezing conditions.
 - Any potential site or material limitations related to the proposed ADC to be evaluated during the trial period.
 - Testing methods and frequency to be used to measure performance and consistency in the material to be used as ADC, including a requirement to re-analyze the material if the process generating the ADC (waste material) changes.
 - Procedures for monitoring and documenting ADC performance and frequency of documentation.

The DNR may prohibit or limit the use of any ADC if there are problems with the materials resulting in nuisance conditions or a negative effect on landfill performance.

Possible Conditions of Approval

The following are general and material-specific conditions that plan review staff are encouraged to consider including in plan of operation approvals for the use of ADC. The conditions may be revised or deleted based on the knowledge and characteristics of each source of ADC, even if the ADC is in a category that has been approved in the past. Each situation and application is unique and conditions may vary among landfills. This is not a complete listing of all possible ADC conditions and additional conditions may be appropriate. Also, if the condition is adequately addressed in the landfill's plan of operation or modification request, then the use of a condition may not be necessary.

1. Alternate daily cover materials shall not be used as daily or intermediate cover in areas of the landfill where storm water contacting this material has the potential to run off beyond the limits of waste, such as exterior side slopes or final grades. Measures shall be taken to prevent tracking of alternate daily cover materials to outside the limits of waste placement.
2. Alternate daily cover shall not contain free liquids.
3. The annual report for the landfill shall include the tonnage for each waste used as ADC, the ratio of waste to ADC by volume or weight, and a discussion of any changes and/or problems encountered with the use of the ADCs at the landfill.

4. The landfill operator shall remove, scarify or mix-in to the extent possible, at the beginning of the next operating day, any daily cover and alternative daily cover that would create a barrier to the movement of leachate and gas.
5. ADC materials shall be stored within the lined footprint of the landfill.
6. Environmental fees shall be paid on the disposal of any solid waste that was approved for use as an ADC material or construction of internal roads, dikes or berms, but was not used for those purposes.

Spray-on Slurry/Foam

7. Spray-on ADC materials shall be covered with the next lift of waste or other approved cover materials within [24 hours – 1 week] of application. [Note: Timeframe should be determined by the DNR reviewer based on the material specifications and experience for the particular spray-on material type.]
8. Spray-on ADC material mixing and application shall be in accordance with the manufacturer's recommendations.
9. Wastes to be covered with spray-on ADC shall be properly compacted to create as smooth a surface as possible. The spray-on ADC shall be applied in at least two different directions to ensure complete coverage of the waste.
10. Spray-on ADC shall not be used whenever weather conditions, e.g. excessive wind, rain or extreme cold temperatures indicate a potential problem with application or functioning of the spray-on material.
11. If spray-on ADC is used, the landfill shall keep a log on a per batch basis that identifies the amount of product used, the amount and type of liquid used to make up the batch, the area covered and the number of days that this area was covered by the batch. A brief summary of its use and rate of application shall be included in the annual report for the facility.

Contaminated Soil

12. Contaminated soil approved for disposal in a MSW landfill through a "contained out" determination made in accordance with [Guidance for Hazardous Waste Remediation \(RR-705\) \[PDF\]](#) may not be used as daily cover.

Foundry Sand Soil

13. If foundry sand becomes windblown, it must be covered with a material that prevents windblown conditions or be sprayed with water.

Boiler Ash

14. The use of boiler ash as ADC shall be limited to weather conditions that do not make the material windblown. If the material becomes windblown, it must be covered with a material that prevents windblown conditions or be sprayed with water.

Auto Shredder Residue (ASR)

15. The application of ASR as ADC shall be limited to weather conditions that do not make the material windblown and cause litter problems outside the limits of waste. If the material causes litter problems outside the limits of waste after placement, other cover material that prevents windblown conditions shall be applied over it.
16. ASR accepted for ADC shall be sampled and tested as described below. The results of all testing shall be submitted to the Department in the required annual report. The sampling collection dates and times shall be included with the submittal. Testing shall be performed on a semi-annual basis.
 - a. Ten samples of each source of ASR shall be collected over a five-day period. Each sample shall be obtained by removing a shovel full of fluff from the conveyor once an hour for a four-hour period in the morning and then again for another four-hour period in the afternoon for a typical 8-hour production cycle. If the production cycle is typically less than 8-hours, then sampling should consist of a minimum of 3 hours of production. Each day's sampling shall be composited into a single sample. The resulting daily sample shall be coned and quartered until 10 gallons of fluff remain. Each 10-gallon sample shall be coned and quartered into two five-gallon samples. The samples shall be stored in sealed containers made of inert material until they are analyzed in a laboratory. The 10 resultant five-gallon samples shall then be tested as outlined in (b) through (d) below.

Three samples from each source of ASR shall be randomly selected and analyzed at a lab for lead, cadmium and mercury using the Toxicity Characteristic Leaching Procedure (TCLP) testing method and for PCB's using a total elemental extraction test method referenced in 40 CFR Part 761.358. If all three samples test below the regulatory limit, then the simple arithmetic mean for the three samples shall be reported as one test result. If any of the three samples tests are above the regulatory limit for any parameter, then the remaining seven samples as referenced in a. above shall be tested for the exceeded parameter and the simple arithmetic mean for the ten samples shall be reported as one test result. A rolling average shall then be used to determine the regulatory status of the ASR. The rolling average shall be based upon the five most recent test results for the above parameters. The oldest test result shall be dropped from the average as each new value is added. ASR from an individual auto shredder shall not be accepted at the landfill if their rolling average exceeds 80% of regulatory limit for a parameter listed below.

b. Regulatory Limits

<u>TCLP test</u>	<u>Solids analysis</u>
Lead	5.0 mg/l
Cadmium	1.0 mg/l
Mercury	0.2 mg/l
PCB	50 mg/kg

- c. If an individual sampling event (arithmetic mean for ten samples) exceeds a regulatory limit for any parameter, an additional sampling event in accordance with paragraph a., above, shall immediately be performed and the samples shall be analyzed for the exceeded parameter in accordance with paragraph b., above.

- d. On an annual basis, one sample of ASR from each source shall be subject to the ASTM D 3987-85 water leach test and the leaching fluid shall be analyzed for dissolved PCBs using an analytical method with a level of detection <10 microgram per liter. TCLP PCB analysis may be used in place of the water leach test.

Processed Construction and Demolition (C&D) Screening Materials

- 17. Processed C&D screening materials shall be characterized in accordance with the facility’s special waste plan prior to acceptance. At a minimum, the initial characterization shall include analysis for sulfate, sieve analysis, asbestos, organic content, TCLP metals, and reactive sulfide for each source. Waste characterization analysis shall be repeated on an annual basis. The results of all testing shall be submitted to the Department in the required annual report.
- 18. Following the initial characterization, processed C&D screening materials used as ADC shall be recharacterized on a monthly basis for sulfate, sieve analysis, asbestos and organic content.
- 19. Screenings exceeding the following characteristics shall not be used as ADC. These screenings shall be disposed of in the landfill in a manner that minimizes the H2S generation potential.

Characteristic	Allowable Range
Particle Size	Up to 2.5 inches
Organic content	Up to 35 percent
Sulfate content	Up to *60,000 mg/kg

*Based on sulfate solubility analysis via EPA Method 9036 or 9056.

- 20. If hydrogen sulfide gas odors become an issue at a landfill, the use of processed C&D screening materials as ADC shall be suspended. The landfill shall immediately investigate the source of the hydrogen sulfide gas and provide a plan to the department describing the degree and extent of the problem and proposed remedy to minimize hydrogen sulfide gas production.

CRT Glass

- 21. Treated CRT glass shall be sampled and tested in accordance with the approved sampling program to ensure the material is non-hazardous before any material is accepted at the landfill for use as ADC. The results of all testing shall be submitted to the DNR in the landfill’s required annual report. The sampling collection dates and times shall be included with the submittal. Testing shall be performed on at least a monthly basis for the first year and whenever there is a change in the process that generates the CRT glass. After the first year, the landfill may request a reduction in the sampling frequency to quarterly.

Performance of ADC Materials

Materials approved for use as ADC, must be adequately applied in order to perform effectively as daily cover. Inadequate daily cover may or may not be immediately evident during an inspection and the use of judgment is often required. In many cases, other nuisance conditions (litter, odors, and vectors/birds) may be related to a lack of or inadequate application of daily cover. Inadequate daily cover may also be the result of poor compaction or loosely placed waste, which can leave an uneven surface or voids that require excess material in order to adequately cover the waste.

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Contact DNRWasteMaterials@wisconsin.gov for further information.

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