

Research, Development and Demonstration Permit (RDDP) Approach

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Landfills

January 83 (23 Years)

WWTP's

Anaerobic Digestion

Methane Collection & Use

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Sanitary Landfill Gas and Leachate Management – DEC 87

Dr. Fred G. Pohland - 1975

Sanitary Landfill Stabilization with Leachate Recycle and Residual Treatment

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- Anaerobic Digestion is Anaerobic Digestion
- Waste reduction
 - i.e., Extend landfill life
- Waste is rendered to its lowest biologic potential
- Methane production is regulated
- Leachate is "pre-treated" by recirculation
 - i.e., Groundwater pollution potential is reduced

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**Why aren't landfills using
this old technology?**



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Federal Requirements



State Requirements

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Feds - Bioreactors



State Authority

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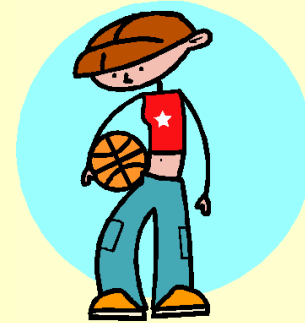
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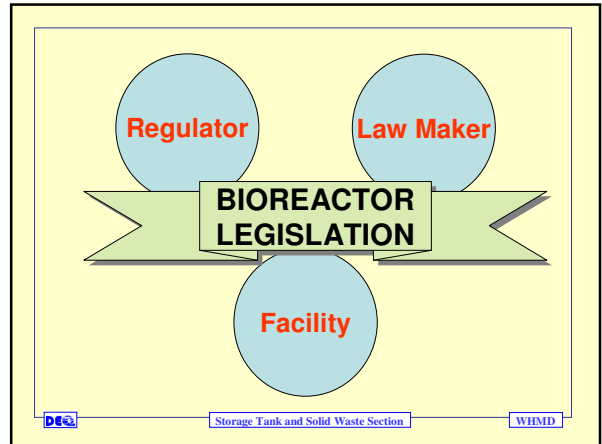
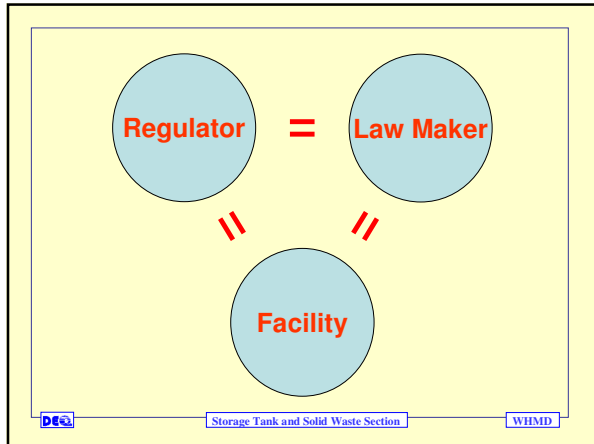
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§ 258.4 Research, Development, and Demonstration permits.

Authorized States issue a RDDP permit for :

- (1) ~~The run-on control systems~~
- (2) **The liquids restrictions in §258.28(a).**
- (3) ~~The final cover criteria~~

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Bioreactors Work

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Research, Development, and Demonstration Permit

Show that they ~~would work~~

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OPERATE

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324.11511b RDDP.

Two Step Process:

- (1) Project Abstract
- (2) Construction Permit

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324.11511b RDDP.

- (1) **Project Abstract** Provide beneficial data on:
 - a. alternative landfill design,
 - b. construction, or
 - c. operating methods.

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324.11511b RDDP.

- Apply for a construction permit under section 11509 to establish the RDDP.
- An **RDDP** is subject to the **same requirements** as apply to other type II landfills.
- An **extension** of the processing period for the permit is not subject to the 20% limitation under section 1307.

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Construction Permit Highlights:

- (4) Same as other Type II landfill permits, **plus**:
 - (a) RDDP **goals**.
 - (b) **Details** of the design, construction, and operation Design: **at least as protective**
 - (c) **types of waste** disposed, excluded, or added, **types and amount of liquids** being added, and, how their addition will **benefit the RDDP**.
 - (d) compliance and operational monitoring.
 - (e) nuisance conditions.

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- (5) "The department may authorize the addition of liquids..."
"including, but not limited to, **septage waste** or other liquid waste...",
to solid waste in an RDDP if the addition is necessary to **accelerate or enhance the biostabilization** of the solid waste and
is not merely a means of **disposal of the liquid**.
The department may require that the liquid waste, added to an RDDP originate within the county or a contiguous county where the RDDP is located.

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- (5) The construction permit application for a RDDP is intended to accelerate or enhance biostabilization of solid waste, shall include all of the following:
- (a) Slope stability evaluation
 - (i) Increased presence of liquids.
 - (ii) Accelerated degradation of the waste.
 - (iii) Increased gas pressure buildup.
 - (iv) Other relevant factors.

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- (5) The construction permit application for a RDDP is intended to accelerate or enhance biostabilization of solid waste, shall include all of the following:
- (a) Slope stability evaluation
 - (b) An operations management plan that incorporates all of the following:
 - (i) components to accelerate or enhance biostabilization of the solid waste.
 - (ii) solid or liquid waste that may be detrimental to the biostabilization or to the RDDP goals.
 - (iii) how these detrimental wastes will be prevented from being disposed in RDDP cells.

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- (5) The construction permit application for a RDDP is intended to accelerate or enhance biostabilization of solid waste, shall include all of the following:
- (a) Slope stability evaluation
 - (b) An operations management plan
 - (c) Parameters, such as moisture content, stability, gas production, and settlement, that will be used by the department to determine when it will authorize postclosure of the RDDP.
 - (d) Information to ensure that the requirements of subsection (6) will be met.

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- (6) An RDDP shall:
- (a) Added liquids are evenly distributed and that side slope breakout of liquids is prevented.
 - (b) **Ensure that daily cover practices or disposal of low permeability solid wastes does not adversely affect the free movement of liquids and gases within the waste mass.**
 - (c) Include all of the following:
 - (i) A means to monitor the **moisture content** and **temperature** of the waste.
 - (ii) **A secondary liner and leachate collection system to monitor the effectiveness of the primary liner.**
 - (iii) A leachate collection system of adequate size for the anticipated increased liquid production rates.
The design factor of safety shall take into account the anticipated increased operational temperatures and other factors as appropriate.
 - (iv) A means to monitor the depth of leachate on the liner.
 - (v) **An integrated active gas collection system.**
Adequate size for the anticipated methane production rates and to control odors.
Operational before the addition of any material to accelerate or enhance biostabilization of the solid waste.

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- (7) Submit a report to the director at least once every 12 months
- **progress** of the **RDDP** in achieving its **goals**.
 - summary of all monitoring and testing results,
 - any other operating information specified by the director in the permit or in a subsequent permit modification or operating condition.

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RDDP Permit: term shall not exceed **3 years**.

Permit extension:

- An individual extension shall not exceed **3 years**.
- Total term of the permit, with all extensions, shall not exceed **12 years**.

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Permit Extension

The application shall include:

- **Detailed assessment**
 - **Show progress in achieving goals,**
 - **List of problems,**
 - **Progress toward resolving problems,**
- **Other information that the director determines is necessary.**

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- (9) **At any time** the director determines that the overall goals of an RDDP, including, but not limited to, **protection of human health or the environment**, are not being achieved, the director may order **immediate termination** of all or part of the operations of the RDDP or may order **other corrective measures**.



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(10)

The **postclosure period** for RDDP begins when the unit where the RDDP was authorized has reached a condition similar to that which landfills that were not authorized as RDDPs would reach prior to postclosure.

Parameters, such as **moisture content, stability, gas production, and settlement**, to attain this condition shall be specified in the permit.

The **perpetual care fund** shall be maintained for the period after final closure of the landfill as specified under section 11525.

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- (11) The director may authorize the conversion of an RDDP to a full-scale operation if the owner or operator of the RDDP demonstrates to the satisfaction of the director that the goals of the RDDP have been met and the authorization does not constitute a less stringent permitting requirement than is required under subtitle D of the solid waste disposal act, 42 USC 6941 to 6949a.
- (12) As used in this section, "RDDP" means a research, development, and demonstration project for a new or existing type II landfill unit or for a lateral expansion of a type II landfill unit.

History: Add. 2005, Act 236, Imd. Eff. Nov. 22, 2005.

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Bioreactors Work

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Why aren't landfills using this old technology?

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The End






QUESTIONS ?





10:00—10:30 Mr. Steve Silver—Chief, Storage Tank and Solid Waste Section, MDEQ
 Ms. Annette DeHavilland—Lead Engineer, DS/EM, Ohio EPA
 Regulatory Perspective
 10:30—10:50 Refreshments
 10:50—11:20 Mr. V. Wesley Sherman, PE—Solid Waste Engineering Coordinator, MDEQ
 Research, Development and Demonstration Permit (RDDP) Approach




- **Regulatory Perspective**
- **Research, Development and Demonstration Permit (RDDP) Approach**









(8) A permit for an RDDP shall specify its term, which shall not exceed 3 years. However, the owner or operator of an RDDP may apply for and the department may grant an extension of the term of the permit, subject to all of the following requirements:

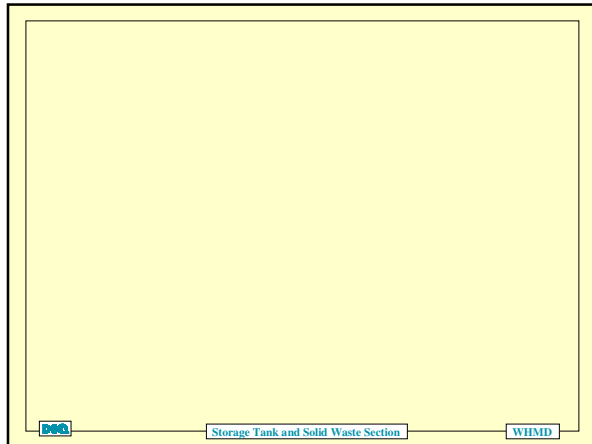
- (a) The application to extend the term of the permit must be received by the department at least 90 days before the expiration of the permit.
- (b) The application shall include a detailed assessment of the RDDP showing the progress of the RDDP in achieving its goals, a list of problems with the RDDP and progress toward resolving those problems, and other information that the director determines is necessary to accomplish the purposes of this part.
- (c) If the department fails to make a final decision within 90 days of receipt of an administratively complete application for an extension of the term of a permit, the term of the permit is considered extended for 3 years.
- (d) An individual extension shall not exceed 3 years, and the total term of the permit with all extensions shall not exceed 12 years.



324.11511b RDDP.
Sec. 11511b.

(1) A person may submit to the department a **project abstract** for an RDDP. If, based on the project abstract, the director determines that the RDDP will provide beneficial data on alternative landfill design, construction, or operating methods, the person may apply for a construction permit under section 11509, including the renewal or modification of a construction permit, authorizing the person to establish the RDDP.

(2) An RDDP is subject to the **same requirements**, including, but not limited to, permitting, construction, licensing, operation, closure, postclosure, financial assurance, fees, and sanctions as apply to other type II landfills or landfill units under this part and the rules promulgated under this part, except as provided in this section.

(3) An **extension** of the processing period for the permit is not subject to the 20% limitation under section 1307.

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(4) An application for an RDDP construction permit shall include, in addition to the applicable information required in other type II landfill construction permit applications, all of the following:

(a) A description of the RDDP **goals**.

(b) **Details** of the design, construction, and operation of the RDDP as necessary to ensure protection of human health and the environment. The design shall be **at least as protective** of human health and the environment as other designs that are required under this part and rules promulgated under this part.

(c) A list and discussion of the **types of waste** being disposed of, excluded, or added, including the **types and amount of liquids** being added and how their addition will **benefit the RDDP**.

(d) A list and discussion of the types of compliance monitoring and operational monitoring that will be performed.

(e) Specific means to address potential nuisance conditions, including, but not limited to, odors and health concerns as a result of human contact.

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(5) The department may authorize the addition of liquids, including, but not limited to, septage waste or other liquid waste, to solid waste in an RDDP if the applicant has demonstrated that the addition is necessary to accelerate or enhance the biostabilization of the solid waste and is not merely a means of disposal of the liquid. The department may require that the septage waste, or any other liquid waste, added to an RDDP originate within the county where the RDDP is located or any county contiguous to the county where the RDDP is located. If an RDDP is intended to accelerate or enhance biostabilization of solid waste, the construction permit application shall include, in addition to the requirements of subsection (4), all of the following:

(a) An evaluation of the potential for a decreased slope stability of the waste caused by any of the following:

- (i) Increased presence of liquids.
- (ii) Accelerated degradation of the waste.
- (iii) Increased gas pressure buildup.
- (iv) Other relevant factors.

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(5)

(b) An operations management plan that incorporates all of the following:

(i) A description of and the proportion and expected quantity of all components that are needed to accelerate or enhance biostabilization of the solid waste.

(ii) A description of any solid or liquid waste that may be detrimental to the biostabilization of the solid waste intended to be disposed of or to the RDDP goals.

(iii) An explanation of how the detrimental waste described in subparagraph (ii) will be prevented from being disposed of in cells approved for the RDDP.

(c) Parameters, such as moisture content, stability, gas production, and settlement, that will be used by the department to determine when it will authorize postclosure of the RDDP under subsection (10).

(d) Information to ensure that the requirements of subsection (6) will be met.

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(6) An RDDP shall meet all of the following requirements:

(a) Ensure that added liquids are evenly distributed and that side slope breakout of liquids is prevented.

(b) Ensure that daily cover practices or disposal of low permeability solid wastes does not adversely affect the free movement of liquids and gases within the waste mass.

(c) Include all of the following:

- (i) A means to monitor the moisture content and temperature of the waste.
- (ii) A secondary liner and leachate collection system to monitor the effectiveness of the primary liner.
- (iii) A leachate collection system of adequate size for the anticipated increased liquid production rates. The design factor of safety shall take into account the anticipated increased operational temperatures and other factors as appropriate.
- (iv) A means to monitor the depth of leachate on the liner.
- (v) An integrated active gas collection system. The system shall be of adequate size for the anticipated methane production rates and to control odors. The system shall be operational before the addition of any material to accelerate or enhance biostabilization of the solid waste.

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(7) The owner or operator of an RDDP for which a construction permit has been issued shall submit a report to the director at least once every 12 months on the progress of the RDDP in achieving its goals. The report shall include a summary of all monitoring and testing results, as well as any other operating information specified by the director in the permit or in a subsequent permit modification or operating condition.

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(8) A permit for an RDDP shall specify its term, which shall not exceed 3 years. However, the owner or operator of an RDDP may apply for and the department may grant an extension of the term of the permit, subject to all of the following requirements:

- (a) The application to extend the term of the permit must be received by the department at least 90 days before the expiration of the permit.
- (b) The application shall include a detailed assessment of the RDDP showing the progress of the RDDP in achieving its goals, a list of problems with the RDDP and progress toward resolving those problems, and other information that the director determines is necessary to accomplish the purposes of this part.
- (c) If the department fails to make a final decision within 90 days of receipt of an administratively complete application for an extension of the term of a permit, the term of the permit is considered extended for 3 years.
- (d) An individual extension shall not exceed 3 years, and the total term of the permit with all extensions shall not exceed 12 years.

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(9) At any time the director determines that the overall goals of an RDDP, including, but not limited to, protection of human health or the environment, are not being achieved, the director may order immediate termination of all or part of the operations of the RDDP or may order other corrective measures.

(10) The postclosure period for a facility authorized as an RDDP begins when the department determines that the unit or portion of the unit where the RDDP was authorized has reached a condition similar to that which landfills that were not authorized as RDDPs would reach prior to postclosure. The parameters, such as moisture content, stability, gas production, and settlement, to attain this condition shall be specified in the permit. The perpetual care fund required under section 11525 shall be maintained for the period after final closure of the landfill as specified under section 11525.

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(11) The director may authorize the conversion of an RDDP to a full-scale operation if the owner or operator of the RDDP demonstrates to the satisfaction of the director that the goals of the RDDP have been met and the authorization does not constitute a less stringent permitting requirement than is required under subtitle D of the solid waste disposal act, 42 USC 6941 to 6949a.

(12) As used in this section, "RDDP" means a research, development, and demonstration project for a new or existing type II landfill unit or for a lateral expansion of a type II landfill unit.

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