

Enviro™ Cover System

Compliance with the US EPA Requirements of Alternative Daily Cover

Enviro™ Cover meets the Environmental Protection Agency's requirements 40CFR258.21 3.3.1(b) of alternative daily cover (ADC) "to control disease vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment".

Compliance with EPA's Requirements

Disease Vectors

Enviro™ Cover controls disease vectors by providing complete coverage of waste, including protruding bulky items on the working face, to block out disease vectors. It provides a slippery plastic surface that creates a hostile environment to rodents. It discourages rodents from burrowing with the highly puncture resistant film.

Enviro™ Cover is applied in 10 to 18-foot wide panels, which are overlapped by approximately 6 to 18 inches and are securely anchored by ballast material. The overlapped panels perform as a continuous barrier over the waste to isolate waste and disease vectors, e.g. flies, mosquitoes, rodents etc., from the atmosphere and human contacts. It does not contain any nutrients for vectors.



Enviro™ Cover completely covers protruding objects and provides a slippery surface that is hostile to rodents.

Fires

There are two methods for ADC's to control landfill fires, namely non-combustibility of the ADC material and its ability to prevent gas and air exchanges. Enviro™ Cover's fire control capability does not rely on the non-combustibility of the material because modern landfills have adopted many practices, such as elimination of hot loads, prohibition of open burning, and restricted access to the working face, to reduce the reliance on non-combustibility of ADC material on the waste surface.

Enviro™ Cover is an impermeable sheet and controls landfill fires by providing a substantially improved barrier to prevent gas and air migration, which is an important element in the spread of landfill fires. It reduces the mixing of atmospheric oxygen with landfill fuel gases and provides a considerable control over the spread of landfill fires. Enviro™ Cover material does not contribute to fire. Even if it is ignited, it will not burn so vigorously and persistently that it creates a hazard.



In 2006, a landfill fire broke out in an Italian landfill that used Enviro™ Cover as the ADC. After the fire, the landfill operator made a remark that Enviro™ Cover performed an excellent function of control over the spread of the landfill fire.

Enviro™ Cover assisted in controlling the spread of a landfill fire in an Italian landfill

Odors

Enviro™ Cover is an impermeable non-reusable polyethylene film that controls odors by providing a continuous impermeable polyethylene barrier to trap odors arising from the waste. The permeability of Enviro™ Cover has been tested by ASTM E96 of the American Society for Materials and Testing. The test results showed that water vapour permeation, which was an indicator of landfill gas and odor emissions, through the film was well below the standard suggested by the American Society for Materials and Testing in its Guideline ASTM D6523.

Blowing Litter

Enviro™ Cover controls blowing litter by providing rapid and continuous coverage over the working face. For example, the RK650 Enviro™ Cover Deployer can cover up to 20,000 ft² in less than one hour. Once applied, Enviro™ Cover seals loose waste items beneath the cover and prevents them from being picked up by winds. Enviro™ Cover can be applied in strong winds, providing the most needed control over blowing litter problem.

Scavenging

Enviro™ Cover controls scavenging by providing a dark brown cover that mimics the color of soil. It discourages burrowing with the highly puncture resistant film. It has a slippery plastic surface that creates a hostile environment to rodents and birds. It traps odors and provides complete coverage of the waste. As opposed to soil, where bulky items may still protrude from the working face, Enviro™ Cover wraps around and encloses the irregularities of the waste to completely block out scavenging.

Threat to Human Health

Enviro™ Cover does not pose a threat to human health. The Material Safety Data Sheet for Enviro™ Cover shows that Enviro™ Cover does not cause skin or eye irritation. It is considered biologically benign. It does not require any special exposure control during ordinary handling.

Threat to the Environment

Enviro™ Cover does not pose a threat to the environment. The Material Safety Data Sheet shows that all chemicals for the Enviro™ Cover film are listed in TSCA inventory list and there is no known adverse effect for these chemicals. (The TSCA Inventory lists the latest public information on all chemicals or chemical substances manufactured or imported into the U.S. for commercial purposes as defined under the Toxic Substances Control Act.) Enviro™ Cover is not a hazardous waste under RCRA regulations. In addition, eco-toxicity tests were carried out on earthworm and daphnia survival, lettuce seed germination, and cress plants and summer barley plants growth. The test results showed that there was no detectable toxic effect on these species.

Test Standard

At present, there is no widely accepted method to test the capability of ADC material to control disease vectors, fires, odors, blowing litter, and scavenging. In agreement with this situation, Neal Bolton wrote in MSW Management (July/August 2001) that, “Another problem related to ADC is the lack of industry-wide standards. What’s acceptable at one landfill might not be acceptable at another... Unfortunately, developing consistent statewide or even national standards isn’t as easy as it sounds.” As a result, there is no standard test, both in laboratory and in the field that can be used to determine ADC compliance with the regulation.

ASTM D6523

Standard Guide for Evaluation and Selection of Alternative Daily Covers (ADCs) for Sanitary Landfills

The American Society for Testing and Materials attempted to evaluate in general terms the capability of different ADCs in complying with the individual EPA requirement. Its guideline ASTM D6523 describes the non-reusable geosynthetic ADC, the ADC category to which Enviro™ Cover belongs, as follows:

Consideration	ASTM D6523 Description
Disease Vector Control?	Can completely cover waste so as not to attract disease vectors
Odor and Air Emission Control?	Trap odors and other emissions; can be tested by ASTM E96 permeation
Dust Control?	Yes
Blowing Litter Control?	Yes
Water Infiltration Control?	Shed rainwater effectively for several layers of cover
Fire Control	
a) Combustible?	Yes
b) Barrier to air/gas movement?	High

Nation-wide Acceptance

The compliance of an ADC with EPA’s requirements is primarily tested by means of a demonstration or trial on a particular site. When a demonstration/trial shows that an ADC complies with the requirements,

the local EPA accepts its use on the site. In other words, the most meaningful evidence of an ADC's ability to comply with the EPA requirements is its acceptance and use in US.

Enviro™ Cover has been evaluated against the EPA requirement by a number of state authorities in US. It is approved in the States of Alaska, Arizona, Arkansas, California, Louisiana, Nebraska, North Carolina, Oregon, South Carolina, Tennessee, Texas and Utah. The number of states approving Enviro™ Cover is continuously increasing. Based on its extensive use, it is evident that Enviro™ Cover complies with EPA's regulations of alternative daily cover to "control disease vectors, fires, odors, blowing litter, and scavenging, without presenting a threat to human health and the environment".