

# COURSE SPECIFICATION

## ATEX Directive and DSEAR Compliance for Landfills

**Target Audience** Training in compliance with the UK Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) for Landfill Gas applications (as per ISA ICoP 2 etc) for landfill operational personnel and staff visiting Flares & EfW installations at landfill sites.

**Length of Course** 1 day

**Aim** The EU ATEX Directive<sup>1</sup> and the Chemical Agents Directive<sup>2</sup> (CAD) are implemented in the UK by the Dangerous Substances and Explosive Atmosphere Regulations 2002 (DSEAR). These are in turn applied within the UK within the Waste Management Industry in accordance with the good practice guidance contained in the Training in DSEAR for Landfill Gas applications (as per ISA ICoPs (Industry Codes of Practice)).

This course provides an overview of the requirements of the ATEX Directive and DSEAR and explains how landfills generate biogas; how biogas generation on landfills can pose a threat of explosion; how this risk can be managed; and the legal responsibilities of employers, individuals and third parties have when operating or visiting an actively gassing landfill site.

At the end of the course delegates will be able to

### Programme Objectives

- Explain the biological conditions under which methanogenesis occurs and how methane is generated in landfills.
- Discuss the explosion and health and safety risks caused by methanogenesis and how to ameliorate these risks.
- Explain how operators select competent persons to analyse risks on these sites and act on behalf of the owner to apply the regulations to ensure compliance.
- Identify sites, equipment, and site features where DSEAR (and ATEX) zone classification applies.
- Apply Industry Codes of Practice (ICoPs) to define ATEX zones in terms of severity of risk and the extent of the hazardous zones, for each zone.
- Explain the requirements for, and if necessary be able to produce or commission, an Explosion Protection Document (or equivalent documentation).
- Write, implement, and manage suitable procedures to adequately ameliorate the risks identified in the Explosion Protection Document, in accordance with DSEAR or other national and regional ATEX compliant regulations.
- Establish a regular review mechanism to ensure that

<sup>1</sup> Explosive Atmospheres Directive 99/92/EC.

<sup>2</sup> Directive 98/24/EC.

the Explosion Protection Document (or equivalent documentation) is updated whenever circumstances change.

The course is built around three units that incorporate formal presentations (PowerPoint), group exercises, and discussions.

The course content is as follows:

**Course Content**

- Landfill gas generation (methanogenesis) and controlling the risk of explosion, including:
  - Common explosion and health and safety risks;
  - Competent person selection to ensure compliance;
  - DSEAR and ATEX zone classification;
  - Identification of locations and site features requiring zoning.
- The Waste Industry DSEAR Codes of Practice including how to write an Explosion Protection Document.
- Site procedures for explosion protection, including visiting non-compliant ATEX landfills.
- Hazard identification and risk assessment.
- Preparing and implementing safe working procedures.

**Frequency of Delivery**

It is suggested that this course may be offered twice a year.

**Number of delegates per course**

To facilitate the proper functioning of the group exercises we recommend that each training course is attended by a maximum of 20, and a minimum of 10, attendees.

**Pre-course Work**

Download and read the Waste Industry ICoPs (from: [DSEAR guidance - Environmental Services Association](#)).

**Post-course Work**

Prepare Explosion Protection Documents, or manage the preparation of Explosion Protection Documents by the competent persons in the Environment Agency.

9.30 am to 10.00 am

**Course Structure (units with timings)**

**Introductions** (0.5 hours)

10.00 am to 10.45 am

**Unit 1 – Landfill Gas Production and Controlling the Risk of Explosion** (0.75 hours)

- Methanogenesis in landfills
- Common explosion health and safety risks

10.45 am to 11.00 am

**Coffee** (0.25 hours)

11.00 am to 11.30 am

**Unit 1 – Landfill Gas Production and Controlling the Risk of Explosion continued** (0.5 hours)

- Competent person selection
- DSEAR and ATEX zone classification.

11.30 am to 1.00 pm

**Unit 2 – Introduction to the Waste Industry DSEAR Codes of Practice (ICOPs)** (1.0 hour)

- Visiting sites, data requirements, and monitoring equipment
- Risk assessment
- Producing an action list
- Compliant signing and notices
- Delegation of compliance to specialist contractors

1.00 pm to 1.45 pm

**Lunch** (0.75 hours)

1.45 pm to 2.45 pm

**Unit 3 – Site Procedures for Explosion Protection** (1 hour)

- Hazard identification and risk assessment
- Visiting non-compliant ATEX landfills

2.45 pm to 3.00 pm

**Tea** (0.25 hours)

3.00 pm to 4.30 pm

**Unit 3 – Site Procedures for Explosion Protection continued** (1.5 hours)

- Zone identification and extent
- Safe working procedures

- Protocols for updating an Explosion Protection Document

4.30 pm to 4.45 pm

### Course summary and round-up

4.45 pm

### Course close

## Unit 1

### Unit 1 – Landfill Gas Production and Controlling the Risk of Explosion

On successful completion of this unit the delegate will be able to:

#### Unit Learning Objectives

- Explain the process of methanogenesis including the physical and biological conditions, and timescales required for methane generation in landfills.
- Describe the common explosion and health and safety risks associated with gassing landfills.
- Explain the purpose and process of competent person selection to ensure compliance.

#### Teaching and Learning Strategies

This unit will be delivered through a combination of PowerPoint presentations, and facilitated discussions.

#### Strategy for Assessment and Evaluation of Learning

The assessment will be formative through feedback from delegates, using;

- Questioning of delegates during the PowerPoint presentations; and
- Through feedback in the facilitated discussions.

## Unit 2

### Unit 2 – Introduction to the Waste Industry DSEAR Codes of Practice (ICOPs)

On successful completion of this unit the delegate will be able to:

#### Unit Learning Objectives

- Follow the appropriate codes of practices for site visits and identify the relevant data requirements and monitoring equipment.
- Describe the codes of practice as they apply to risk assessment.
- Explain how to prepare an action list.
- Identify when it is necessary for a SITA Power employees

to delegate compliance to a specialist contractor.

Teaching and Learning Strategies

This unit will be delivered through a combination of PowerPoint presentations, facilitated discussions, and a group exercise that will require delegates to prepare an explosion protection document based on different scenarios. Each group will be provided with a template and asked to identify and insert the relevant information into the document. Each group will present their results to the class as a whole.

Strategy for Assessment and Evaluation of Learning

The assessment will be formative through feedback from delegates, using;

- Questioning of delegates during the PowerPoint presentations;
- Through feedback in the facilitated discussions; and
- The group presentations made as part of the practical exercise.

**Unit 3**

**Unit 3 – Site Procedures for Explosion Protection**

Unit Learning Objectives

On successful completion of this unit the delegate will be able to:

- Prepare site procedures for the identification of hazards associated with gassing landfills.
- Undertake a risk assessment with respect to gassing landfills.
- Identify DSEAR and ATEX zones and site features and establish their extent.
- Prepare and follow safe working procedures.
- Modify and update an existing Explosion Protection Document.

Teaching and Learning Strategies

This unit will be delivered through a combination of PowerPoint presentations, facilitated discussions, and group exercises that will require delegates to:

- Undertake a hazard identification and risk assessment.
- Undertake a zone identification and extent exercise.
- Prepare a protocol for updating an Explosion Protection Document.

At the end of each exercise each group will present their results to the class as a whole.

Strategy for Assessment and Evaluation of Learning

The assessment will be formative through feedback from delegates, using;

- Questioning of delegates during the PowerPoint presentations;
- Through feedback in the facilitated discussions; and
- The group presentations made as part of the practical exercise.

**Proposed Staff**

**Steve Last – Course Developer and Lead Tutor**

Steve Last is a waste management and water treatment engineer who has worked for Enviro since 1985. His main activities have focussed on Waste Processes and Waste Facility Development including landfill development, leachate treatment and composting. In addition to UK and Ireland based projects, he has worked on projects in Hong Kong, and South Africa.

**Pen Profile**

Steve has been involved in waste management in the UK throughout the development of waste management technology from the days of largely un-engineered landfills, to the current generation of EU Landfill Regulations compliant sites. He has been involved in the development of some of the largest landfill sites from Scotland to Hong Kong, and in particular has helped develop Enviro's leading reputation in leachate treatment.

Steve was a member of the ESA leachate ICoP Steering Committee responsible for preparing the ICoPs for the Waste Management Industry, during 2006.

Steve has prepared numerous DSEAR Risk Assessments and Explosion Protection Documents for landfill sites for local authority waste officers, Waste Management Companies, and specialist landfill gas extraction and EfW companies, since full implementation of the DSEAR in 2006.

**Proposed Staff**

**Person to be agreed – Course Developer and Tutor**

**Pen Profile**

To be agreed this person would be a qualified Health and safety Professional with a strong working knowledge of Health & Safety legislation (eg ex-Fire Officer); **(Details to follow on application.)**

**Proposed Staff**

**Suggested landfill manager/Tutor**

**Ken Rowe (sub-consultant) - Tutor**

Ken Rowe is an experienced landfill manager and Construction Quality Assurance Engineer and Consultant.

He is self employed and runs his own company (Rowe Environmental). His COTC for landfill operations (special waste) enables Ken to operate landfills as a landfill manager, and he regularly obtains commissions to run and troubleshoot problem landfills.

In the past 2 years, Ken has worked for the following UK waste management companies; Shanks, Hanson Waste Management and WRG.

**Pen Profile**

During the same period he has worked as a supervisor in England, Scotland and Ireland, and on the island of New Caledonia in the Pacific on projects including landfill lining using natural mineral liners, welded LLDPE, GCL, geodrainage textiles, and restoration capping projects including landfill gas and leachate extraction works, with many also incorporating electricity generation (flaring and gas engines).

Ken has also managed a landfill gas migration monitoring and control, including a landfill site where landfill gas migration occurred into a housing area.

**Proposed Staff**

**Paul Clapham – Course review and project management**

Paul joined Enviro in February 2006 having been previously seconded to the New Technologies Work Stream of Defra's Waste Implementation Programme from the Chartered Institution of Wastes Management.

Paul has nearly twenty years experience of environmental management within industry having worked in the nuclear and power engineering sectors before focusing on the energy and environmental needs of the small and medium-sized business sector.

**Pen Profile**

In addition to working with industry, Paul has worked within higher education with a number of universities. For the last five years Paul has been closely involved in the waste management industry, with a particular emphasis on new and emerging waste management technologies.

For more information contact Paul Clapham or Steve Last  
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[http://atexanddsear.co.uk/html/contact\\_us.html](http://atexanddsear.co.uk/html/contact_us.html)