



**Connah's Quay Power Station
Environmental Reporting Form to EA
PART A**

Permit Number	EA/EPR/MP3337SH
Name of Operator	E.ON UK
Location of Installation	Connah's Quay Power Station Kelsterton Road Connah's Quay Deeside CH5 4BP
Time and date of the detection	2pm 16 th September 2013

(a) Notification requirements for any malfunction , breakdown or failure of equipment or techniques, accident or fugitive emission which has caused , is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of Incident	Not yet determined
Reference or description of the location of the event	Discovery of pool of hydrochloric acid outside of bund surrounding hydrochloric acid storage tank at Water Treatment Plant.
Description of where any release into the environment took place	Failure to contain Hydrochloric Acid leading to loss outside of bund, into site drainage. Some acid also lost to localised ground.
Substance(s) potentially released	Hydrochloric Acid
Best estimate of the quantity or rate of release of substance	Estimated 2 to 2.4 m ³ , over possible 12 day period.
Measures taken, or intended to be taken, to stop any emission	Investigation to determine presence of acid, neutralisation of pooled acid outside of bund. Investigation work completed to ensure no further potential for backwash or acid overflow from tank. Levels monitored to ascertain no further leaks or loss of pollutant in occurrence. Execution of contract with emergency contractors Adler & Allen to decontaminate bund, and affix temporary repair. Bund will then be investigated for re-strengthening works to repair acid damage. Engineers will also examine tank integrity. Geologists also contacted to examine potential for contamination of land. Thorough investigation will occur, and strict scrutiny will be carried out to discover route cause of incident. External investigators have already been appointed to the project.
Description of the failure of the accident	It is believed that demineralised water from the water treatment plant has backwashed into the Acid tank, leading to overflow of acid into bund. Acid has then found weakest point of bund and eroded through wall to collate outside of bund. Acid believed to have then flowed into neighbouring SDX chemical drains and been discharged (once neutralised) with purge waters.

(b) Notification requirements for the breach of a limit
To be notified within 24 hours of detection unless otherwise specified below

INITIALS	DATE
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Emission point reference/source	Tank 1 : Hydrochloric Acid tank (and bund)
Parameter(s)	Hydrochloric Acid (35% strength)
Limit	N/A - Release not permitted.
Measured value and uncertainty	Calculated 2.4m ³ of Hydrochloric Acid (35%)
Date and time of monitoring	19.20pm - 19.30pm 31 st July 2013 to to 7pm 5 th Feb
Measures taken or intended to be taken to stop the emission	Measures taken to ensure no further overflow of water into acid tank possible. Tank levels monitored to ensure maintained integrity. Emergency call out engineers commissioning to clean up and affix repair to bund.

(c) Notification requirements for the detection of any significant adverse effect	
To be notified within 24 hours	
Description of where the effect on the environment was detected	Localised area external to Hydrochloric Acid tank at Water Treatment Plant
Substance(s) detected	Hydrochloric Acid (35%)
Concentration(s) of substance(s) detected	pH 1
Date of monitoring /sampling	4pm Monday 16 th September 2013.

Name*	Andy Black
Post	SHE Team Member.
Signature	A. Black
Date	07/09/2013

*authorised to sign on behalf of E.ON UK plc



Bradford, Julie

From: Ross, Stuart
Sent: 31 October 2013 10:09
To: Bradford, Julie
Subject: FW: Amended HCl leak Form A
Attachments: PtAAcidTank16_09_2013_amended_date_.doc

Hi Julie

RE: E.ON Connah's Quay

This Part A replaces the original as mentioned below – i'll recycle the old one.

Thanks

Stu

From: Black, Andrew [<mailto:Andy.Black@eon-uk.com>]
Sent: 31 October 2013 09:51
To: Ross, Stuart
Subject: Amended HCl leak Form A

Stuart

As I may have explained, we're in the process of an ISO14001 recertification audit from LRQA this week, and one initial discovery was that the Form A submitted to yourself / NRW for the recent failure of containment of HCl contained an incorrect date.

The Form A detailed an incident date of July which was incorrect, and should have stated 16th July 2013.

Therefore please find enclosed an amended Form A for the change of date.

Kind Regards

Andy

Andy Black

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E.On UK Ltd
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**Connah's Quay Power Station
Environmental Reporting Form to EA
PART A**

Permit Number	EA/EPR/MP3337SH
Name of Operator	E.ON UK
Location of Installation	Connah's Quay Power Station Kelsterton Road Connah's Quay Deeside CH5 4BP
Time and date of the detection	4pm 16 th September 2013

(a) Notification requirements for any malfunction , breakdown or failure of equipment or techniques, accident or fugitive emission which has caused , is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of Incident	Not yet determined
Reference or description of the location of the event	Interior and exterior of chemical storage tank area of water treatment plant.
Description of where any release into the environment took place	Ground area directly adjacent to the chemical storage bund and local site chemical drains.
Substance(s) potentially released	Hydrochloric Acid
Best estimate of the quantity or rate of release of substance	Estimated 2 to 2.4 m ³ , over possible 12 day period.
Measures taken, or intended to be taken, to stop any emission	Investigation to determine presence of acid, neutralisation of pooled acid outside of bund. Investigation work completed to ensure no further potential for backwash or acid overflow from tank. Levels monitored to ascertain no further leaks or loss of pollutant in occurrence. Execution of contract with emergency contractors Adler & Allen to decontaminate bund, and affix temporary repair. Bund will then be investigated for re-strengthening works to repair acid damage. Engineers will also examine tank integrity. Geologists also contacted to examine potential for contamination of land. Thorough investigation will occur, and strict scrutiny will be carried out to discover route cause of incident. External investigators have already been appointed to the project.
Description of the failure of the accident	It is believed that demineralised water from the water treatment plant has backwashed into the Acid tank, leading to overflow of acid into containment bund. Acid is believed to have penetrated the bund wall and leaked through on to ground adjacent. Acid then thought to have flowed into neighbouring chemical drains where it was subsequently neutralised.

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/source	Tank 1 : Hydrochloric Acid tank (and bund)
Parameter (s)	Hydrochloric Acid (35% strength)

INITIALS	DATE
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Limit	N/A - Release not permitted.
Measured value and uncertainty	Calculated 2.4m ³ of Hydrochloric Acid (35%)
Date and time of monitoring	N/A
Measures taken or intended to be taken to stop the emission	Measures taken to ensure no further overflow of water into acid tank possible. Tank levels monitored to ensure maintained integrity. Emergency call out engineers commissioning to clean up and affix repair to bund.

(c) Notification requirements for the detection of any significant adverse effect	
To be notified within 24 hours	
Description of where the effect on the environment was detected	Localised area external to Hydrochloric Acid tank at Water Treatment Plant
Substance(s) detected	Hydrochloric Acid (35%)
Concentration(s) of substance(s) detected	pH 1
Date of monitoring /sampling	4pm Monday 16 th September 2013.

Name*	Andy Black
Post	SHE Team Member.
Signature	A Black.
Date	17/09/2013

*authorised to sign on behalf of E.ON UK plc



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09 DEC 2013

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.

E.ON have completed an internal investigation into this incident and identified the following points.

Stream 2 in the water treatment plant had been isolated for maintenance.

This included the stream being made unavailable on the 'DCS'. This is a simple process of toggling a virtual switch from available to unavailable. During the morning of the 4th September Stream 2 was made available via the DCS and then shortly afterwards the switch was put back into the unavailable. The Programme Logic Controller (PLC) then went into its normal operation of starting the regeneration process even though the stream was physically isolated.

The system used for resin bed regeneration is common to all three streams and is able to operate if one or more streams are isolated. The regeneration system contains bulk acid and caustic tanks. In the regeneration process, water is used to draw (under vacuum) HCl or caustic from the bulk tanks into the respective measuring tank. This relevant solution is then drawn through into the water treatment plant using water as a carrier.

The carrier water was unable to pass into Stream 2 as the hand valves were closed as part of the isolation measures. It is thought likely that the water passed back through the HCl and Caustic supply line, back into the measuring tank and back into the bulk tanks, as this is the path of least resistance. This resulted in the level in the tank rising and resulting in a small volume (1.9T) of acid entering the bund. There are non-return valves on the HCL and Caustic supply lines however, these valves are only in place to prevent small amounts of water passing back

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into the bulk tanks and would not have prevented water entering the bulk tanks under these conditions.

The investigation has identified that this incident would not have occurred if there had been interlocks in place to prevent a regeneration starting on a stream that was isolated for maintenance. It has been identified through the investigation that the staff at Connah's Quay were not aware that the PLC would carry out its normal operation even if isolations were in place.

An inspection of the bund post-incident has been carried out by the ENT Civil Engineering team. This investigation has identified that there was a defect in the coating applied to the surface of the bund. This defect was located at the point where the sump meets the bund floor. The fault could have been caused either by poor application of the coating at this point or by damage-caused by the sump metal grid repeatedly rubbing the surface, causing cracking. This fault in the coating would have allowed the acid to attack the concrete. This fault was not identified in the previous Civil inspection and would not have been identified through the weekly bund inspections.

Based upon research conducted by ENT, it is probable that the damage caused to the bund was as a direct result of the incident and would most likely have occurred rapidly. This is believed to be the reason the presence of acid was not identified on the weekly bund inspections as the failure occurred between inspections.

The investigation has also identified the underlying geology of the site is

	such that the acid would not have soaked into the ground, the soil just below the area outside the bund is clay and river silts, this would have acted to retain the acid in one place. This is further confirmed by the onsite intrusive investigation not identifying any acid below the surface of the stone chippings around the bund, approx. depth 50cm. An inspection of the SDX drains which is alongside the bund shows a sign of damage to the mortar around the brick work. The acid would have attacked the mortar and then entered the chemical drainage system SDX drains. This is supported further by a reduction in the pH in the SDX drains on the 12th September.
Measures taken, or intended to be taken, to prevent a recurrence of the incident	The following measures have been taken to prevent reoccurrence: A revision has been made to the Programme Logic Controller Systems to install interlocks to prevent system regeneration occurring if that stream is isolated for maintenance purposes. The Bund has been repaired and lining replaced. A programme of detailed inspections of all bunds across site is in progress, to identify any similar issues. A review of other systems to identify if a backfilling situation could occur. Review current weekly bund inspection regime and identify areas for improvement.
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	The contaminated material from around the bund has been removed and disposed of appropriately. There were further checks on the immediate surrounding area to identify any further contamination.
The dates of any unauthorised emissions from the installation in	Loss of Containment : 12th March 2012

the preceding 24 months.	GTP Exceedance : 7 th Feb 2012 Current Transformer Fire : 18 th July 2012
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Name*	Andy Black
Post	SHE Team Member
Signature	
Date	9 th December 2013

* authorised to sign on behalf of E.ON UK plc

Permit Conditions

1.1 General Management

3.1.1 No point source emissions to land