RPS287 Treating wastewater containing concrete at construction sites

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Understanding What it means



RPS287 Introduction

Content and Purpose of Talk

- (1) To review the contents and requirements of RPS287.
- (2) Present thoughts on areas of RPS287 which may cause confusion.
- (3) Discuss improvements which could be made to RPS287 to enhance its usability.
- (4) Encourage stakeholders to engage with other working groups as a means of proving a co-ordinated approach to improving RPS287.



Regulatory Position Statements What are they?

A Regulatory Position Statement is a document issued by the EA/NRW.

It sets out a set of rules, which if fully complied with will enable you to conduct an activity without having an environmental permit in place.

If the RPS cannot be complied and a permit is not in place the conduction of the activity would be a breach of environmental law and prosecution by the EA/NRW may result.

If the RPS is followed the EA/NRW would not pursue a prosecution for not having a valid environmental permit.



RPS287 What Activities does it cover ?

Applicable Activities

The storing, treating and using of wastewater containing concrete on a construction site before use or disposal.

Example Activities

Water produced by washing out equipment such as concrete mixers, concrete batching plants, delivery lorries and related equipment such as chutes, pumps lines, drums and wheelbarrows.



RPS287 What does it allow me to do ?

Allowed Activities

Use of treated wastewater containing concrete for washing of equipment.

Use of treated or untreated wastewater containing concrete for producing new concrete.

Prohibited Activities Use of treated or untreated wastewater containing concrete for dust suppression.

Excluded Materials RPS287 does not apply to water containing grouts.



RPS287 What conditions must I comply with? (Part 1)

Method Statement: You must follow a method statement which minimises the risk of pollution, including but not limited to control measures, monitoring and inspection, staff training and incident response planning.

Keep Records: records must be kept for at least 2 years from your last use of the RPS to show that you have complied with the RPS. These records must be made available to the Environment agency on request

Storage: You must

- securely store the water secure means that the water cannot escape, and unauthorised people cannot access it.
- contain the water before treatment and use, for example through an impermeable settling tank, engineered lagoon or leakproof skips
- maintain a freeboard of 10% of the capacity of the tank, engineered lagoon or leakproof skip to prevent overtopping
- You must not store more than 30m³ of waste water containing concrete at any time in any single place.



What conditions must I comply with? (Part 2)

Treatment: You may only treat wastewater containing concrete by:

- filtration, settlement lagoons or physical dewatering, for example in a settlement tank, silt press or other specialised treatment system
- correcting the pH using solutions or carbon dioxide before use or lawful disposal
- using products that solidify water containing concrete prior to use or transfer from the construction site
- You must operate and maintain specialised treatment systems using trained operatives in line with the manufacturer's instructions
- You must not use any chemicals or flocculants other than products to solidify water containing concrete

Use: You Must

- monitor pH of the water containing concrete and keep records of compliance of the treated water prior to use or lawful disposal
- comply with your waste environmental permit or exemption if you want to use set concrete on the construction site



RPS287 Where can it not be used?

Close to water courses: You must not carry out activities associated with storing, treating or using water containing concrete within 10 m of any water course

Close to Environmentally Sensitive Areas: You must not carry out activities associated with storing, treating or using water containing concrete within 50m of:

- Sites of Special Scientific Interest
- Special Areas of Conservation (SACs) including proposed SACs
- Special Protection Areas (SPAs) including potential SPAs
- Ramsar sites wetlands of international importance (both listed and proposed)
- Marine Conservation Zones
- other nature conservation sites, such as ancient woodlands and local and national nature reserves
- local wildlife sites



RPS287 What if I need to discharge waste water?

You must:

• keep records demonstrating lawful discharge of waste waters to groundwater, surface water or sewer.

Things to Note:

If the water under this RPS cannot be used on the construction site; then it must be legally discharged or transported off-site for treatment and disposal.

Before you discharge water containing concrete you must take certain actions first. If you discharge to:

- foul sewer get the sewerage undertaker's consent
- surface water get a water discharge activity permit
- ground get a groundwater activity permit unless you qualify for a groundwater activity exclusion after assessment from the local Groundwater and Contaminated Land team



RPS287 When do I need to check for updates ?

The Environment Agency will review this RPS by 30 June 2027.

- The Environment Agency can withdraw or amend this regulatory position before the review date if they consider it necessary. This includes where the activity that this RPS relates to has not changed.
- You will need to check back from time to time, including at and before the review date, to see if this RPS still applies.
- This RPS remains in force until it is removed from GOV.UK or is otherwise identified as having been withdrawn.
- You can <u>subscribe to email updates about this RPS</u> These will tell you if the RPS has changed and when it has been withdrawn.



RPS287 What must you do if you can't comply with the RPS?

If you operate under this RPS but can no longer comply with it, you must:

- stop the activity to which this RPS relates
- tell the Environment Agency immediately by emailing wastetreatment@environmentagency.gov.uk and put 'RPS 287' in the subject



RPS287 Lets go back to the beginning



RPS287 Treating wastewater containing concrete at construction sites

How do I test to see if my wastewater contains concrete ?

Fresh concrete is a thick slurry composed of a mixture of:

- Water
- Cement, silt sized particles that over site cause chemical reactions to occur that cement (set) the slurry into a cemented block
- Aggregate, ranging from fine sand to gravel.

When wastewater containing wet concrete is allowed to stand, the aggregate will settle out at the bottom of the container and a clear liquid will be present on top of the water.

The clear liquid will not contain aggregate, will it therefore contain concrete ?

The liquid phase will have a highly elevated pH, due to the presence of dissolved lime (pH12-14), making it hazardous.

The liquid phase, poses a significant risk of pollution to the environment and to human health (concrete burns)

Would a better title be Treating wastewater containing cementitious materials on construction sites



What does it allow me to do?

Prohibited Activities

Use of treated or untreated wastewater containing concrete for dust suppression.

The EA states that the presence of hexavalent chromium in the wastewater poses a significant risk to human health.

Concrete is typically composed of one part cement, two parts sand, three parts aggregate with added water. Hexavalent chromium is present in low concentrations in the cement. Dilution by mixing with the aggregate and water will occur, with further dilutions during equipment washing.

In 2005 (EEC Directive 2003/53/EC) put limits on hexavalent chromium in cement.

- Cement or cement-based preparations placed on the European Market must not release when mixed with water more than 2 mg/kg (2 ppm) of soluble hexavalent chromium.
- The purpose of this EC directive was to reduce the incidence of allergic contact dermatitis, a disease in masonry workers that was quite common before 2005
- Does concrete wash contain hexavalent chromium at levels which could give rise to human health concerns ?

What data exists showing concentrations of Hexavalent Chromium in concrete wash water ?



RPS287 What does it allow me to do ?

Excluded Materials

RPS287 does not apply to water containing grouts.

What is a grout ? Broadly speaking grouts can be divided into two main types

- Chemical Grouts
- Cementitious Grouts (sanded and unsanded)

Mortar used in the placement of brick and blocks is a type of cementitious grout (unsanded grout) and wash water created by the washing of any equipment that has come into contact with mortar would be excluded from treatment in accordance with RPS 287.

Where such wash water that has been in contact with mortar is being generated on-site, communication with the EA to determine its suitability for treatment in accordance with RPS287 would be required.

As written the RPS does not allow this water to be treated and and environmental permit would be required to cover its storage and treatment.



What conditions must I comply with? (Part 1)

Storage: You must

- securely store the water secure means that the water cannot escape, and unauthorised people cannot access it.
- contain the water before treatment and use, for example through an impermeable settling tank, engineered lagoon or leakproof skips
- maintain a freeboard of 10% of the capacity of the tank, engineered lagoon or leakproof skip to prevent overtopping
- You must not store more than 30m³ of wastewater containing concrete at any time in single location

The highly elevated pH of the liquid phase make the liquid a hazardous material. The hazardous nature of the material should be taken into account when setting up the storage area. For example: barrier fencing, signage, PPE, spill control, bunding and structure of the storage tank.

Wet unset concrete solids when in contact with water will continue to release lime, causing the pH to rise, early separation of solids from the liquid phase prevents this , limiting the potential for elevated water pH to occur.

Dilution of 30m³ of pH12 water with 30,000 m³ of tap water would reduce the pH to circa pH9. Due to this pollution risk, the storage of untreated concrete wash water should be avoided. Treatment of the wash water as it is produced eliminates the risks associated with storage of hazardous material



What conditions must I comply with? (Part 2)

Treatment: You may only treat wastewater containing concrete by:

- filtration, settlement lagoons or physical dewatering, for example in a settlement tank, silt press or other specialised treatment system
- correcting the pH using solutions or carbon dioxide before use or lawful disposal
- using products that solidify water containing concrete prior to use or transfer from the construction site
- You must operate and maintain specialised treatment systems using trained operatives in line with the manufacturer's instructions
- You must not use any chemicals or flocculants other than products to solidify water containing concrete

Solidification

Normally you would not solidify a water, you would normally only solidify a slurry. When solidifying concrete washwater it would be normal to separate the liquid from the settled solids (slurry), the slurry could then be solidified to allow to be safely transported. The removed liquid phase would need to be treated to reduce its highly elevated pH, untreated this will be a hazardous liquid.



What if I need to discharge waste water?

Things to Note:

If the water under this RPS cannot be used on the construction site; then it must be legally discharged or transported off-site for treatment and disposal.

Before you discharge water containing concrete you must take certain actions first. If you discharge to:

- foul sewer get the sewerage undertaker's consent
- surface water get a <u>water discharge activity permit</u>
- ground get a groundwater activity permit unless you qualify for a groundwater activity exclusion after assessment from the local Groundwater and Contaminated Land team

No mention of off-site disposal as a disposal route is given within the RPS. The off-site disposal of concrete wash water should be in accordance with the Duty of Care for waste management.

The correct EWC code needs to be assigned to the waste:

Untreated Concrete Wash Water 16 10 01* Aqueous liquid wastes containing hazardous substances Treated concrete wash water 16 10 02 Aqueous liquid wastes other than those mentioned in 16 10 01

The waste can only be carried by a licensed waste carrier and can only be received and treated by a suitably licensed waste management facility.

If the hexavalent chromium is present within the wash water at concentrations which have an effect on humans, in addition to pH adjustment what additional treatment measures will be needed to ensure that the treated wash water is non-hazardous



What must you do if you can't comply with the RPS?

If you operate under this RPS but can no longer comply with it, you must:

- stop the activity to which this RPS relates
- tell the Environment Agency immediately by emailing wastetreatment@environmentagency.gov.uk and put 'RPS 287' in the subject

If you can't fully comply with the RPS, you will need to obtain a permit. This will take time to obtain and need for the permit must be identified early in the planning stages of the project so that it can be obtained prior to site works commencing



RPS287 How could it be made better?

Point for considerations:

- (1) Provide definitions of key terms eg grout, wastewater containing concrete.
- (2) Confirm whether wash water from the washing of equipment that has been in contact with mortar treatable under RPS287.
- (3) Identity what test will be used to confirm the presence of concrete in wastewater.
- (4) Provide confirmation of what concentrations of hexavalent in both untreated and treated wash water give rise to concern in relation to both the use of the wash water for dust suppression and for discharge of small volumes of treated wash water.
- (5) Provide guidance on how secure storage of untreated wash water is to be achieved. Confirm that treatment at the time of production avoiding the need for storage of significant volumes of wash water is the preferred practice. An example layout for a storage area showing the key components required would be beneficial.
- (6) Confirm what EWC code should be applied to both treated and untreated wash water.
- (7) Provide clarify of the hazards (environmental and health and safety) associated with untreated concrete wash water.

What other points should be considered for inclusion ?







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Concrete Wash Water Working Group



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