



Environmental **Newsletter**

Prepared by WG Environment

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Waste water minimisation

1- Summary

EIGA Working Group 5 – Environment has compiled this environmental newsletter to give information to EIGA members, specifically to Directors, technical managers, company environmental specialists and National Trade Associations on best practice for managing water and waste water and minimising usage and discharges.

2- Introduction

Water is becoming an increasingly scarce expensive resource with mains, sewerage and trade effluent charges rising.

Pressures on waste water are also linked to the availability of drinking and other water and to achieving the EU targets for water quality.

Against this background EIGA has written a newsletter on water usage, however, minimising waste water is also an important area and that further supports this previous newsletter. EIGA has therefore brought together further advice specifically focusing on waste water minimisation. Many of the processes used in industrial gas operations produce waste water such as water in the cooling towers for air separation plants, water for cleaning vehicles and equipments, process water for manufacturing dissolved acetylene.

Most companies and organisations know how much water they use, but may not always use this knowledge to help them reduce the amount of water consumed during such activities which ultimately contributes to lowering the volumes of waste water produced. By using less water, companies save money on both water supply and wastewater disposal and minimise their impact on the environment.

3- How to minimise waste water

EIGA has published a number of documents that are a good basis from which to focus on issues related to water use and water minimisation. Guidelines on environmental management systems (EIGA IGC Doc 107) includes checklist in the Appendix 4 on how to conduct an initial environmental assessment on the use of water and waste water. The Environmental issues guide (EIGA IGC Doc 106 – section 4.4 Energy and water use covers some of the basic issues on water use. The EIGA publication series on environmental impacts for different process and operations (e.g. environmental impacts of air separation units EIGA IGC Doc 94) also covers specific environmental issues related to processes. Finally, there is also some good guidance in EIGA publication Good environmental management practices for industrial gas industry EIGA IGC Doc 88. The table below provides some ideas for best practice for activities that use significant quantities of water by EIGA member companies.

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Activity creating waste water	Examples of best practice solutions to minimise waste water
Boiler blow down	<ul style="list-style-type: none"> - Avoid excessive chemical feed through tight control of water chemistry. Correct chemical feed will ensure that correct concentration levels are optimised and excess water is prevented from being discharged - Run boiler at optimum concentration cycles to minimize chemical loss, wastewater discharges, and makeup water consumption - Consider using automatic blow down equipment (changing from manual to automatic can reduce boiler energy use by 2 – 5% and reduce blow down losses by upto 20%) - Consider improvements to water quality for feed water to reduce blow down rates
Cooling tower and systems	<ul style="list-style-type: none"> - Minimize leaks through preventive maintenance (check for excessive drift and splash) - Reduce controlled losses (e.g. look at bleed losses, concentration cycles) - Maintain proper level of corrosion inhibitors to extend life of solutions - Ensure all float valves are set within operating ranges - Investigate fitting VSD motor drives to cooling tower fans so that cooling system is better matched to system heat load
Cylinder testing	<ul style="list-style-type: none"> - Where possible use other testing methods such as ultrasonic and validation processes to extend the test period - Recycle cylinder test water to the extent practical. - Discharge through a permitted outfall or sewer connection - Consider alternative sources of grey water (i.e. rainwater harvesting)
Air emission control equipment (e.g water/chemical based scrubbers) used for cylinder paint shops, gas production purification	<ul style="list-style-type: none"> - Planned regular maintenance - Regular monitoring to ensure plant is operating optimally
Water effluents from dissolved acetylene processes	<ul style="list-style-type: none"> - Water should be reused in the process to achieve zero discharge
Compressor condensate	<ul style="list-style-type: none"> - Many sites produce waste water condensate from compressor which may often be discharged straight to a water sewer, this water could be re-used and used as make-up water for cooling towers.
Vehicle washing	<ul style="list-style-type: none"> - Wash vehicles in wash bays or other designated areas using grey water collected from other site operations and reused where possible - Ensure that oil/water separator are regularly maintained to ensure that they are operating optimally

Also remember when checking site waste water services that domestic wastewater usually goes down a sewer for treatment by your local water company or authority whereas uncontaminated rainwater should preferably be discharged to a soak away or to a surface water drain.

To avoid unnecessary treatment charges:

- Check that rainwater is not entering the foul sewer
- Keep domestic sewage and surface water drainage separate from trade effluent
- Label or colour-code all drains surface water and effluent – make sure that staff are aware of the difference.

3.1- Action plan for waste water minimisation

Sites should consider developing a site action plan for waste water minimisation and would consider the following key points in such a plan.

Step 1: Obtaining commitment and resources

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Step 2: Preliminary review

For example questions to be asked when assessing opportunities to reduce waste water on site would start with focussing on equipment/plant with the largest wastewater/effluent flow and then consider for each flow:

- Is there a action plan to ensure compliance with monitoring and effluent quality requirements in the site operating or discharge permit
- Is it necessary to produce this wastewater/effluent?
- Is clean water going down the drain and, if so, why?
- Is the discharge authorised and legal, what are the current limits and are they still appropriate for site activities?
- Can the wastewater/effluent be re-used in a process or used for lower grade duties, e.g. cleaning?
- Would it be cost-effective to treat the wastewater/effluent on-site for re-use, e.g. simple filtering as opposed to more sophisticated techniques like reverse osmosis (where large volumes are produced on site and cost are high such techniques may be cost effective?)
- Consider combining waste water effluents that react together to reduce “pollutant loading/concentration ” so that lower waste water discharge fees can be applied

Step 3: Drawing the water balance picture to identify improvements

More details on constructing a plan can be found in the newsletter on water use. It is often beneficial to combine a water use plan with a waste water discharge plan.

4- Actions

The EIGA member companies must make sure that they:

- Comply with all regulatory discharge licences for waste water
- Consider best practice techniques for minimising waste water discharge

Comments

The EIGA WG-5 members welcome any feedback on this and other publications.

If you need any more information or would like to make any comments please contact your WG-5 representative, the WG-5 Chairman or the EIGA office.

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