



Stage 6 Chemistry Depth Study – Drinking Water Field report/presentation

Sample Assessment task for Orchard Hills Water Filtration Plant excursion

Depth Study Inquiry Question:

How does the application of chemistry (acid/base and equilibrium) in an industrial setting (Sydney Water) treat drinking water for the protection of public health?

Context:

Students will create a scientific field report or presentation related to acid/base equilibrium application in an industrial context to protect public health. Students will do a fieldwork investigation on water filtration processes at Orchard Hills Water Filtration Plant, with secondary research and content from Modules 5 & 6.

Students will:

- participate in fieldwork investigating the processes at a water filtration plant
- collect first-hand evidence of chemistry being applied in an industrial setting
- participate and observe lab experiments that replicate processes on site
- gather knowledge and skills to help understanding the implications of chemistry for society and the environment.

The suggested depth study time allocated is 8 hours including:

1. 4 hours excursion/ fieldwork at Orchard Hills Water Filtration Plant, where you will:
 - see how we maintain and monitor acid, base and equilibrium reactions
 - understand how we produce drinking water within quality guidelines
 - recognise the greater context of public perception and trust in drinking water
 - collect information, data and ideas from first-hand experience and hands on activities.
2. 4 hours in class time for secondary research, data analysis and create report/presentation using our online resources and activities.

Task number: 2	Weighting: 25%	Timing: Term 2, Week 8
Outcomes assessed A student: <ul style="list-style-type: none">• describes, explains and quantitatively analyses acids and bases using contemporary models CH12-13• designs and evaluates investigations in order to obtain primary and secondary data and information CH11/12-2• analyses and evaluates primary and secondary data and information CH11/12-5• communicates scientific understanding using suitable language and terminology for a specific audience or purpose CH11/12-7		
Nature of the task A report/presentation requires students to: <ul style="list-style-type: none">• describe the context of the site (Orchard Hills Water Filtration Plant)• explain the relevance of the site to the investigation's question• process and analyse first-hand lab activities, fieldwork and secondary data• communicate the results and conclusion of the fieldwork, lab and research investigations		

Outcomes:**Knowledge and understanding**

CH12-13 Describes, explains and quantitatively analyses acids and bases using contemporary models

Students:

- explore acid/base analysis techniques that are applied in industries
- describe the importance of buffers in natural systems

Planning

CH11/12-2 Designs and evaluates investigations in order to obtain primary and secondary data and information

Students:

- assess risks, consider ethical issues and select appropriate materials and technologies when designing and planning an investigation

Analysis and problem solving

CH11/12-5 Analyses and evaluates primary and secondary data and information

Students:

- assess relevance and reliability of the gathered information
- collate useful and relevant information into water filtration process that relates to acid/base and their uses and applications
- evaluate the effect of buffers in natural systems

Communicating

CH11/12-7 Communicates scientific understanding using suitable language and terminology for a specific audience or purpose

Students:

- propose ideas in a coherent and logical way and correctly use scientific terminology and principles
- present information on the science and chemistry of acid/base reactions and buffers
- summarise from a range of sources and appropriately acknowledge sources

Conducting Investigations (Optional)

CH11/12-3 Conducts investigation to collect valid and reliable primary and secondary data and information

Students:

- employ and evaluate safe work practices and manage risks
- use appropriate technologies to ensure and evaluate accuracy
- select and extract information from a wide range of reliable secondary sources and acknowledge them using an accepted referencing style

Marking Guidelines:

Students:	Range of Marks
<ul style="list-style-type: none"> • assess risks, consider ethical issues and select appropriate materials and technologies • demonstrate comprehensive knowledge and understanding of acid/base analysis techniques that are applied in industries • evaluate the importance of buffers in natural systems • presents a Water Filtration Process that relates to acid/base and their uses and applications to protect public health • assess the relevance and reliability of the gathered information • use scientific terminology and principles effectively • acknowledge sources appropriately and thoroughly 	21–25
<ul style="list-style-type: none"> • assess risks, consider relevant issues, materials and technologies • demonstrate accurate knowledge and understanding of the acid/base analysis techniques that are applied in industries • discuss the importance of buffers in natural systems • presents a Water Filtration Process that collates useful and relevant information referring to acid/bases and their uses and applications to protect public health • describe the relevance and reliability of the gathered information • use scientific terminology and principles • acknowledge sources appropriately 	16–20
<ul style="list-style-type: none"> • assess risks, consider issues, materials and technologies • demonstrate sound knowledge and understanding of the acid/base analysis techniques • describe the effect of buffers in natural systems • presents a Water Filtration Process that outlines the applications or uses of acid/bases • describe relevance or reliability of the gathered information • use some scientific terminology • acknowledge sources 	11–15
<ul style="list-style-type: none"> • assess risks, consider issues, materials or technologies • demonstrate basic knowledge and understanding of the acid/base analysis techniques • outline the effect of buffers in natural systems • presents a Water Filtration Process that identifies the applications or uses of acid/bases • outlines the relevance or reliability of the gathered information • use limited scientific terminology • acknowledge some sources 	6–10
<ul style="list-style-type: none"> • assess risks • gather some relevant information about acid/base analysis techniques or buffers in natural systems • present an incomplete Water Filtration Process that relates to acid/bases and their uses and applications • use some scientific terms • attempt to acknowledge some sources 	1–5

Teacher Comments

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Contact us

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