

Unit 9 Common acids and alkalis**You must know****9.1 Common acids and alkalis****A. Acids B. Alkalis**

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| 1. Common acids and alkalis in daily life and the school laboratory. (📖Book 2B P.3-4) |
| 2. Properties of acids and alkalis. (📖Book 2B P.3-6) |
| 3. Checkpoint 1 (📖Book 2B P.6) |

9.2 Distinguishing acids and alkalis**A. Natural indicators**

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| 4. The use of natural indicator (📖Book 2B P.7-10) |
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B. Litmus

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| 5. The use of litmus (📖Book 2B P.12-14) |
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C. Universal indicator and the pH scale

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| 6. The use of universal indicator and pH paper (📖Book 2B P.16-18) |
| 7. The difference between the use of litmus paper and universal indicator (📖Book 2B P.15) |

D. pH meter and data logger

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| 8. The use of pH meter and data logger (📖Book 2B P.20-23) |
| 9. Checkpoint 2 (📖Book 2B P.24) |
| 10. Workbook 2B 9.2 Distinguishing acids and alkalis (W.B. 2B P.3-11) |

9.3 Neutralization**A. What neutralization is?**

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| 11. The process, changes, products, word equations of neutralization (📖Book 2B P.20-23) |
| 12. (📖Log Book) Make your own notes about neutralization: <ul style="list-style-type: none"> (a) What is neutralization; (b) Using suitable graphs, describe the change in pH during neutralization when <ul style="list-style-type: none"> ➤ an acid is added to an alkali ➤ an alkali is added to an acid; (c) The relative amount of acids and alkalis used to neutralize each other; (d) What are the products of neutralization; (e) Write word equations for neutralization between different acids and alkalis; |

B. Applications of neutralization

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| 13. Daily life examples of neutralization and the reactions involved (📖Book 2B P.34-35) |
| 14. Checkpoint 3 (📖Book 2B P.36) |
| 15. Workbook 2B 9.3 Neutralization (W.B. 2B P.12-17) |

9.4 Corrosive nature of acids**A. Effect of acids on metals**

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| 16. The experimental set-up, observations, test of products and word equations of reactions between dilute acid and metals (📖Book 2B P.37-40) |
| 17. The order of metal reactivity |
| 18. (📖Log Book) Make your own notes about reactions between dilute acid and metals: (a) experimental set-up and observations of <ul style="list-style-type: none">➤ the reaction between dilute acid and metals;➤ the test for the gaseous product; (b) which metals react with dilute acid; (c) compare the reactivity of the metals used in this experiment; (d) write word equations for the reaction between dilute acid and metals; |

B. Effect of acids on building materials

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| 19. The experimental set-up, observations, test of products and word equations of reactions between dilute acid and building materials (📖Book 2B P.40-44) |
| 20. Checkpoint 4 (📖Book 2B P.49) |
| 21. Workbook 2B 9.4 Corrosive nature of acids (W.B. 2B P.18-21) |
| 22. (📖Log Book) Make your own notes about reactions of dilute acid and building materials: (a) experimental set-up and observations of <ul style="list-style-type: none">➤ the reaction between dilute acid and some building materials;➤ the test for the gaseous product; (b) which building materials react with dilute acid; (c) write word equations for the reaction between dilute acid and the building materials; |

C. Acid rain

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| 23. Cause of acid rain (📖Book 2B P.45 & extensive reading 1) a) Formation of air pollutants b) Formation of acid rain |
| 24. Effects of acid rain on environment and living things. (📖Book 2B P.46-49 & extensive reading 2) |

Extensive Reading 1 : 9.4 Corrosive nature of acids (Acid rain)

Acid rain problem in Mainland China

Study the passage below and answer the questions that follow.

31 March 2009

Acid rain problem in Mainland China

Acid rain has become a serious environmental problem in Mainland China since the late 1980s. Today, in many industrial cities of Mainland China, the rain is constantly more acidic than usual.

A major cause of acid rain in Mainland China is the extensive use of coal. When coal is burned, the sulphur impurities in coal react with oxygen to form sulphur dioxide. In addition, nitrogen and oxygen from air react to form nitrogen oxides under high temperatures inside the vehicle engines. The number of motor vehicles in Mainland China has greatly increased in recent years, from 6.2 million in 1990 to 36.0 million in 2003. Therefore, the amount of nitrogen oxides released from motor vehicles has also increased rapidly.

Emission of a large amount of sulphur dioxide and nitrogen oxides into the atmosphere finally leads to the formation of acid rain.



The rapid development of industrial plants is believed to be one of the factors that cause acid rain in Mainland China.

*This article is rewritten from a newspaper in San Francisco, USA.

Questions

1. What are the air pollutants that cause acid rain?
2. How do these air pollutants formed?
3. How do the air pollutants mentioned in Question 1 lead to the formation of acid rain?

Extensive Reading 2 : 9.4 Corrosive nature of acids (Acid rain)

Increasing acidity in oceans

Read the article below and answer the questions that follow.

13 December 2009

Increasing acidity in oceans*

A recent study found that corals in the Pacific Ocean were disappearing faster than expected. Carbon dioxide is released when fossil fuels are burned. Part of the carbon dioxide released is absorbed by the world's oceans.

When carbon dioxide dissolves in the water, it produces carbonic acid. The carbonic acid reacts with calcium carbonate in the coral skeletons, causing damage to coral reefs.



Different kinds of corals

Increasing carbon dioxide emissions are making our oceans more acidic. It is estimated that the increasing acidity in oceans could destroy all of our coral reefs as early as 2050.



Different kinds of corals

*This article is rewritten from a newspaper in San Francisco, USA.

Questions

1. Why are coral reefs affected by the increase in acidity of our oceans?
2. What can we do to slow down the increase in acidity in the oceans?