Activity 1: Ordering and managing stock levels

You work in a specialist chemical manufacturing company who produce small batches of chemical substances to order. As a stock control manager, you are responsible for maintaining appropriate stocks of chemicals and ensuring that stock remains within its ‘use-by’ date, so chemicals do not get used beyond their recommended maximum storage date.

You have the following data available to you, which details:

* how long a chemical can be safely stored for
* the volume of solution contained in each bottle held in stock
* the volume used by your company each month
* the delivery time required between placing an order for a new batch of chemicals and receiving delivery.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Chemical | Maximum storage time (months) | Volume per container (litres) | Volume used per month (litres) | Delivery time (months) |
| Ammonium hydroxide | 8 | 2500 | 500 | 2 |
| Citric acid | 4 | 10 000 | 2500 | 1 |
| Ethanoic acid | 12 | 6000 | 500 | 2 |
| Phosphoric acid | 8 | 600 | 100 | 2 |
| Sodium hydroxide | 12 | 2000 | 1000 | 3 |
| Potassium hydroxide | 18 | 2000 | 100 | 3 |
| Silver nitrate | 4 | 250 | 50 | 1 |

Using information in the table above, answer the following questions:

1. How many months’ supply does the company hold of ammonium hydroxide?

…………………………………………………………………………………………………………

1. Which chemical does the company hold the longest supply of, given their rates of use?

…………………………………………………………………………………………………………

1. (a) Identify the **two** chemicals which will run out exactly on their expiry date.

…………………………………………………………………………………………………………

(b) Explain why it would be inefficient for the company to maintain their stock of ethanoic acid to more than one container at any one time.

…………………………………………………………………………………………………………

………………………………………………………………………………………………………

………………………………………………………………………………………………………

1. If today was the 1 March, what is the last date a new container of ammonium hydroxide would need to be ordered by? Explain your answer.

………………………………………………………………………………………………………

………………………………………………………………………………………………………

………………………………………………………………………………………………………

1. (a) Identify the **two** chemicals which will exceed their expiry date before being used.

………………………………………………………………………………………………………

(b) Suggest **one** reason why this reduces the company’s profit.

………………………………………………………………………………………………………

………………………………………………………………………………………………………

1. Explain why the company must hold a stock of more than one container of sodium hydroxide at any one time.

………………………………………………………………………………………………………

………………………………………………………………………………………………………

………………………………………………………………………………………………………

1. Concentrated sodium hydroxide causes severe burns to the skin and permanent eye damage. Each delivery of sodium hydroxide costs the company £5000 on top of the cost of the chemical, to cover specialist delivery and insurance requirements.

When re-ordering sodium hydroxide, how many containers of sodium hydroxide should be ordered to minimise delivery costs and maximise profit?

………………………………………………………………………………………………………

………………………………………………………………………………………………………

………………………………………………………………………………………………………

1. Which of the following are reasons why it is important to carefully oversee the ordering and managing of chemical stocks?

|  |  |  |
| --- | --- | --- |
| Ensuring chemical ingredients are always used within a month of opening |  |  |
| Ensuring a sufficient supply of required consumables and materials |  |  |
| Reducing the costs of excess stock |  |  |
| Increasing the delivery costs, which can be passed on to consumers |  |  |
| Improving productivity |  |  |
| Maximising the levels of wastage of chemical stocks |  |  |
| Ensuing that chemicals are used before the expiry date |  |  |
| Ensuring the safety of stocks of chemicals |  |  |