

Worksheet 5.3

The significance of salt

Salt is an absolutely crucial commodity in our lives. Historically it was of such great importance that people were paid with salt. This is the origin of the word 'salary' which obviously we now receive in money when we are working. The importance of salt lay in its use to preserve food: a particularly important property in times when there was no access to refrigeration.

The economic importance of salt was so significant that governments used to impose 'salt taxes'. Perhaps the most infamous of these was the one the British imposed in India. In a deeply significant move to assert independence, Gandhi led a famous march to the sea in direct peaceful opposition to the British salt tax. On arrival at the sea, Gandhi and his followers broke the British law by making their own salt from seawater. The following is an extract from a report in the *Guardian* [a British newspaper] of 13 March 1930.

At 6.30 yesterday morning 'Mahatma' Gandhi left Ahmedabad on foot at the head of a band of civil resistance volunteers on a 100-mile march to the sea at Jalalpur, on the Gulf of Cambay. He thus signalled the beginning of civil disobedience or non-violent defiance of the British administration, and brought into action the new Congress policy of Purna Swaraj, or complete independence.

For a fortnight Gandhi's march is intended to be only a demonstration. Then, when he expects to be at the sea, he will begin to produce salt from brine, and so infringe the Government salt monopoly, defying the Government to arrest and punish him. At the same time his supporters everywhere have been incited by him to refuse to pay local taxes.

There were sympathetic demonstrations yesterday in various parts of India, but apparently little excitement, and no reported incident of serious disorder. Gandhi, of course, represents a section of India only.

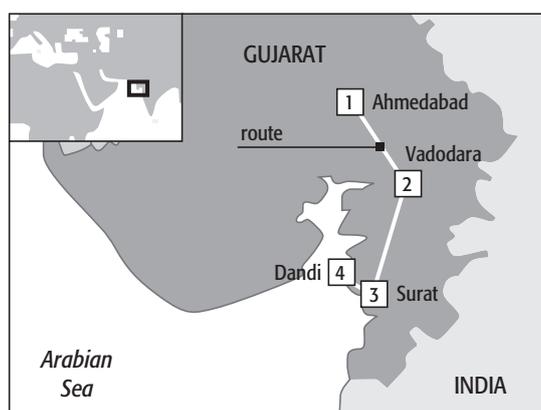


Figure 1 The route of Gandhi's salt march to Dandi, where he picked up salt on the beach.
© Guardian News & Media Ltd, 1930.

The 'Salt March' (or Salt Satyagraha) (Figure 1) was a critical step in the historical process that led to the independence of India and Pakistan in 1947.

The sheer economic and social importance of salt led also to a novel way of mining. Salt had been produced from the salt springs at Bex in Switzerland since the fifteenth century. The extraction of the salt had been an industry in the town until the 1860s, but it was facing a challenge from other, more accessible, sources elsewhere in

Switzerland. Rather than close the mine, in 1867 the company hit upon the idea of ‘solution mining’. This consisted of pumping water into the caverns, dissolving the salt to form brine, and then pumping the brine out from underground (Figure 2). The mine still functions today, producing salt and acting as a historic tourist attraction.

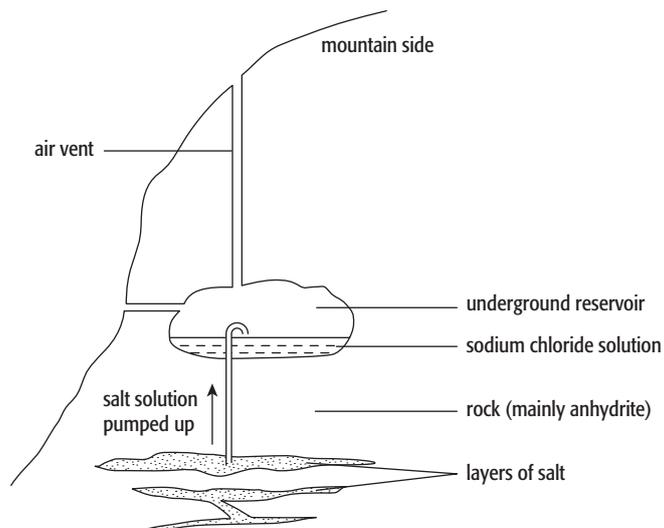


Figure 2 The diagram shows the salt mines at Bex in Switzerland. The salt is dissolved by water from underground springs and then pumped up to a reservoir where it is stored as a solution.

1 a What aspect of British rule in India was Gandhi protesting against in leading the Salt March?

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b Describe **two** ways in which salt was very significant in people’s lives at the time.

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c Write the chemical formula for sodium chloride.

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d Suggest how solid sodium chloride is obtained from sodium chloride solution.

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2 a Sodium chloride has an ionic giant structure.

Which **one** of the following statements best describes an aqueous solution of sodium chloride?

- i** a mixture of sodium ions and chlorine molecules in water
- ii** a mixture of sodium atoms and chlorine atoms in water

iii a mixture of sodium ions and chloride ions in water

iv a mixture of sodium, chloride, oxide and hydrogen ions

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b The rock surrounding the layers of salt is anhydrite. Pure anhydrite has the chemical formula CaSO_4 .

i State the name of the chemical found in anhydrite.

ii When anhydrite reacts with water, gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) is formed. Complete the equation for this reaction.



iii Which one of the following describes this reaction? Put a ring around the correct answer.

combustion fermentation hydration oxidation reduction

iv The chemical in anhydrite can be made by reacting calcium hydroxide with sulfuric acid. Complete the balanced equation for this reaction.

