

## Question 24 (4 marks)

Assess the impact of atomic absorption spectroscopy (AAS) on the scientific understanding of the effects of trace elements.

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Before AAS was developed there were not techniques sensitive enough to measure the very low concentrations that trace elements occur in. Thus scientists were basically ignorant of their existence or significance of trace elements. However the development of Atomic absorption spectroscopy which uses the unique spectrum of elements (elements selectively absorb wavelengths of light) to measure their concentration - & is sensitive to 0.01ppm. The amount of absorption of specific wavelengths in a vapourised sample is measured. This has allowed scientists to isolate the function of specific trace elements in plant growth, animal & human health. Some trace elements that are now known to be important for humans are Zinc & Copper. Magnesium. Scientific understanding has lead to soils deficient in certain elements being supplemented through fertilizer & humans deficient in specific elements can have their diet supplemented through tablets eg. Iron.

AAS has lead to understanding of why cattle on the coast suffered a 'disease' but when moved to a pasture inland became better (The Coast Disease - was caused by a deficiency in trace elements)

health problems