



Introduction

How to use this handbook

This handbook replaces the old Gastec "Blue Book." It is designed to be easier to use and more informative for a wide variety of people who are responsible for the management of not only working places and offices, but also of public facilities and premises (including air, water and the soil). The information is presented in a format that we feel is useful to both the beginner and the experienced health and safety professional.

- If you are a beginner, we strongly recommend that you first read the following two sections "What is the detector tube method?" and "Gastec detector tube technology". The sections, "Gastec Standard Detector Tube System Basic Configuration" (page 1-2) through "Simple and accurate measurements with the Gastec Standard Detector Tube System" (page 1-12) of Chapter 1, "Gastec Standard Detector Tube System" will give you basic information required for measurements with the Gastec Standard Detector Tube System, Gastec's most widely used detector tube system .

- If you are an experienced user of Gastec Standard Detector Tube System, you can start with the section, "Simple and accurate measurements with the Gastec Standard Detector Tube System" (page 1-12). The sections, "More about Gastec detector tubes" (page 1-18) and "Tips for measurements" (page 1-28) will be helpful to understand more about the System and obtain useful information for performing accurate measurements.

- If you want to know more about Gastec capabilities, the sections, "Gastec Standard Detector Tube System Basic Configuration" (page 1-2) through "Simple and accurate measurements with the Gastec Standard Detector Tube System" (page 1-12) and "Gastec means quality" (page 1-32) through "Summary of Gastec environmental analysis technology" (page 1-44) will be useful.

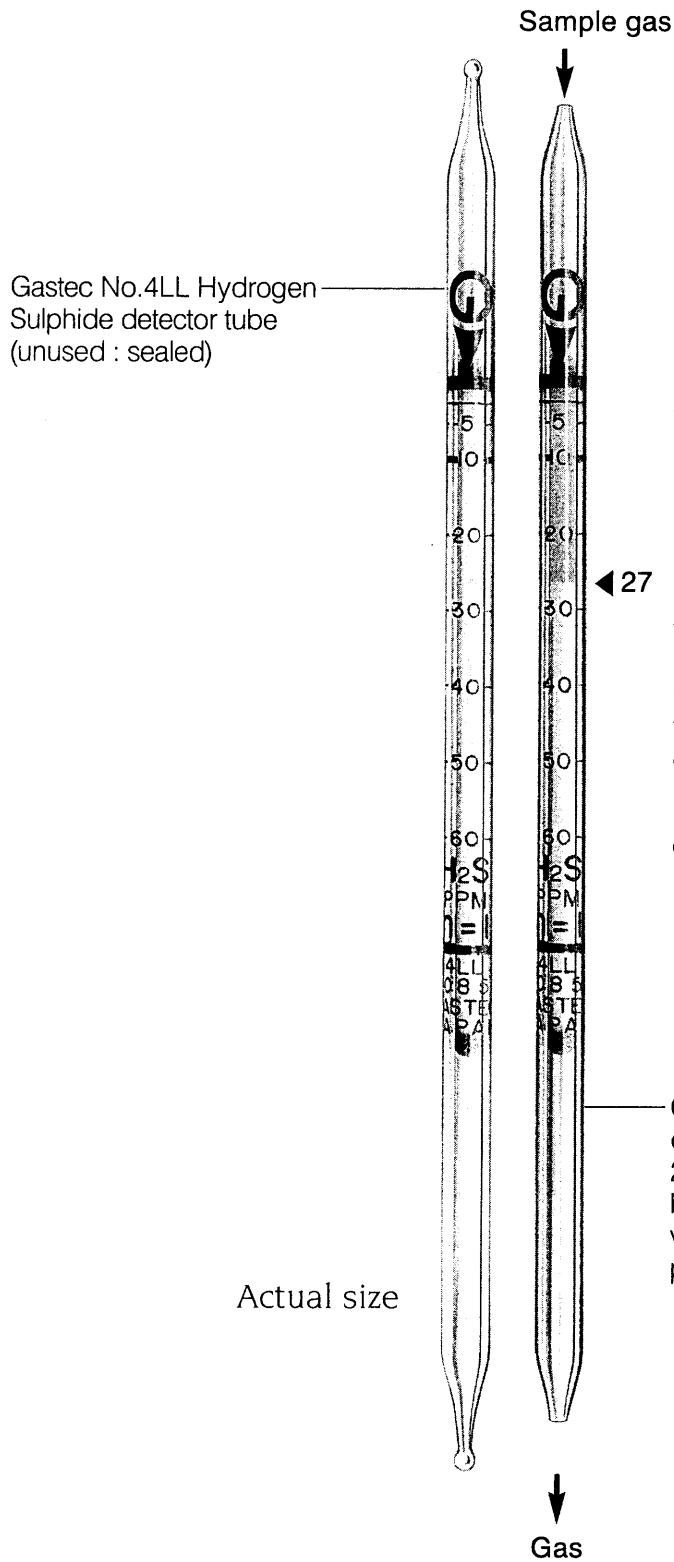
Individual Gastec standard detector tubes are described in Chapter 2 , "Specifications of Gastec Standard Detector Tubes" (page 2-1). Other Gastec detector tube systems are described in Chapter 3 . "Gastec Applied Detector Tube Systems for Gas and Vapour Analysis" (page 3-1) through Chapter 6, "Gastec Measurement Support Systems" (page 6-1). For hazardous substances that can be measured with Gastec environmental analysis technology, the properties including possible symptoms caused by exposure are given in Chapter 7, "Properties of Substances to be Measured" (page 7-1). With this information, you can take quick corrective action in managing your environmental program. You can find desired information quickly by using a variety of appendices (page 9-1) and the index (page 9-25).

Today environmental problems are expanding from local to global concerns. We hope this handbook will serve as a guidebook for your environmental management. At Gastec we are always open to customers' requests or questions, so feel free to contact us or one of our many agents worldwide.

All information exhibited in this handbook has prepared from the data as of May, 2008, and specification, appearance and usage of the Gastec detector Tubes are subject to change without notice.

Please, therefore, confirm and refer to the instruction sheet in the box of tubes on use of the detector tubes.

What is the detector tube method?



The first detector tube was invented in the U.S.A. in 1919 to measure concentrations of carbon monoxide (CO) in working places. It utilized a chemical reaction of CO with a special reagent filled in a thin glass tube. If air containing CO passed through the tube, the reagent would change its colour in reaction to CO. Its colour intensity was proportional to the CO concentration in the air. Therefore, operators could get the concentration by comparing the colour intensity with a previously prepared colour chart.

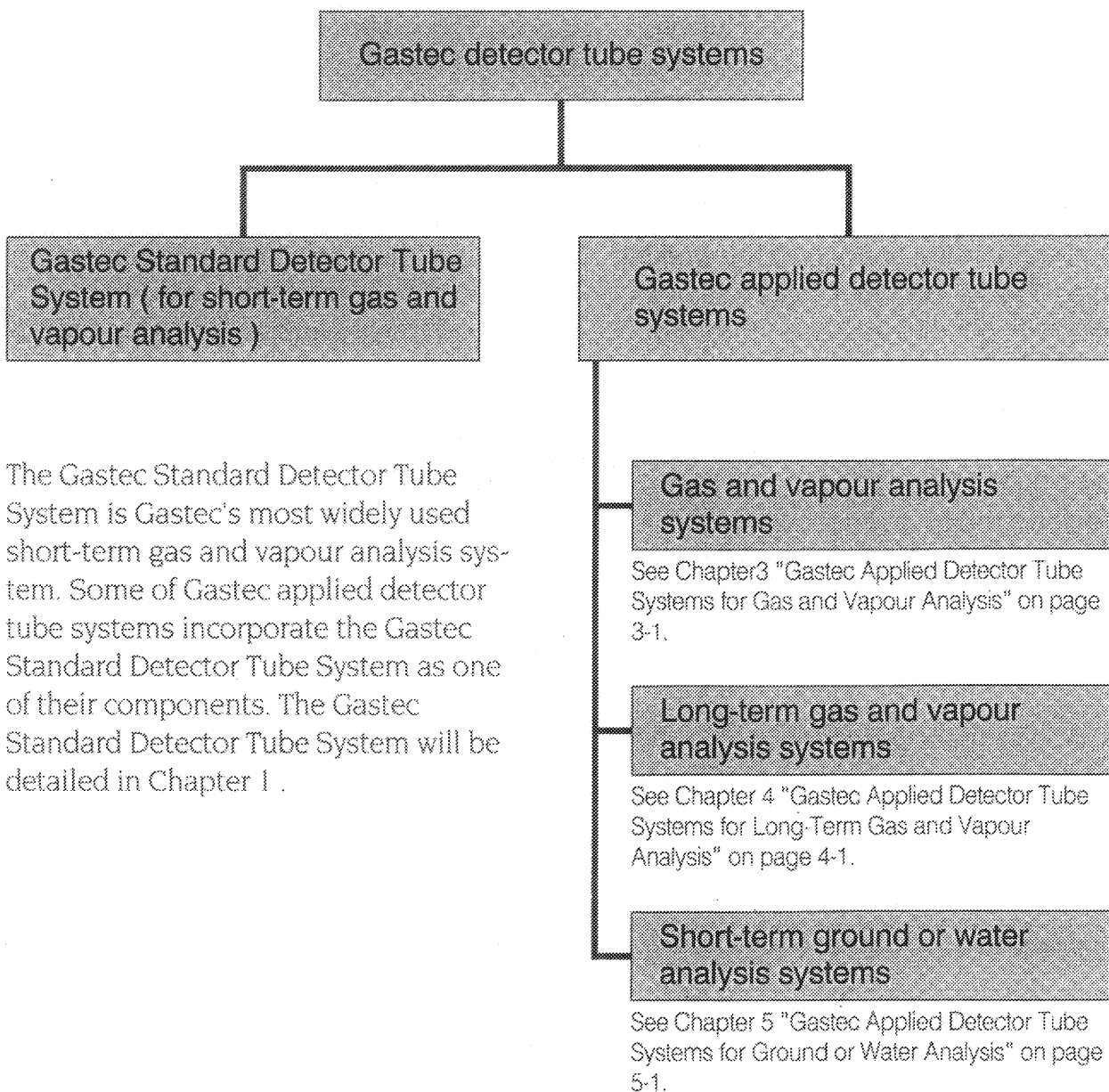
Gastec No.4LL Hydrogen Sulphide detector tube (after measurement of 27ppm). Prior to measurement, snap both tips off then through the gas and vapour (from the upper side in this photo).

This method provided a lot of advantages over laboratory analysis methods that used to require complicated equipment, specialists to operate, and a long time to get the results. The detector tube method permits a simple, quick, and economical analysis at the working sites. Today, this technology has been widely applied to measure concentrations of a huge variety of substances, with great improvements in measurement accuracy, reagent stability that contributes to prolonged shelf life of detector tubes, and the means of concentration reading. Some independent testing agencies have been established to certify the quality of detector tubes.

In 1970, Gastec developed Japan's first direct reading detector tubes that indicate concentrations directly on calibration scales printed on the tubes. Now operators can quickly get concentrations by simply reading the scales on the tubes without referring to colour charts. At Gastec, we have been endeavouring toward the research and development of the highest quality detector tubes for analysing not only airborne gases and vapours but also pollutants in the ground and water. Our efforts have won a high reputation among our customers in almost all sectors of the society. As of May, 2008, more than 500 kinds of Gastec detector tube applications have been introduced.

Gastec detector tube technology

The Gastec detector tube technology is available in a wide variety of system products which are roughly classified as follows:



The Gastec Standard Detector Tube System is Gastec's most widely used short-term gas and vapour analysis system. Some of Gastec applied detector tube systems incorporate the Gastec Standard Detector Tube System as one of their components. The Gastec Standard Detector Tube System will be detailed in Chapter 1.