

## Web based fumigation monitoring for stored product protection

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DOI: 10.14455/DOA.res.2014.70

### Abstract

Phosphine is the fumigant most used worldwide for the control of insect populations. Successful Stored Product Protection Programs require fumigant gas to achieve penetration within the grain mass. To achieve this; precise phosphine fumigation control and accurate gas concentration measurements are needed. The increased use of phosphine has caused a well-documented increase in the frequency of global resistances of major target pests. This resistance to phosphine is a major challenge to the worldwide grain market. Insect resistance to phosphine occurs partly because of improper application of the product. Accurate measurements of phosphine gas concentrations will increase the likelihood of successful fumigations. A precise dose level is desired. Situations are avoided where either too little or too much gas is used. Dissemination of measured phosphine concentrations in a timely manner will aide in informed decisions. Stored Product Protection has additional requirements in remote regions. In these cases the value of real time access via the internet to fumigation data collected from a remote location adds significant benefits. Allocation of manpower and materials resources are optimized by access to information about fumigant gas levels in grain storages via the internet. Data is automatically transferred to a central database that can be accessed in real-time from any location with internet access. This data collection and reporting maintains traceability to certified compliance with encrypted format. Spectros Instruments' Infrared Fumigation Monitors provide remote internet access and have for the past 20 years excelled and achieved many certifications to become a valuable fumigation tool worldwide. Spectros Monitors with internal sensors continuously update diagnostics and track pressures, temperatures, sample flows and detector voltages. Transfer of accurate, real-time phosphine concentrations (to pc, cell phone) allows informed decisions to be made to achieve required CxT and avoid situations leading to target pest phosphine resistance.

Keywords: phosphine, fumigation, quarantine, remote data access, web, fumigation monitor, infrared, internet