

Edition: 12

Volume: 3

Month: December

Year: 2016

# Tech Talk

Monthly Newsletter by Spectro Group

## Director's Desk

We take this opportunity to thank you each one of you for making our Newsletter a success. We are pleased to share with you the new edition of our monthly Newsletter "Tech-Talk" which is designed to be an elemental source for leading information related to developing technologies, ingenious techniques and innovative approaches. This newsletter is contemplated to underline electrifying forthcoming activities and resources of our organization.



**Kuldeep Dhingra**  
Managing Director



**Sushant Gupta**  
Executive Director

## In this Issue

- Editorial
- Brief About Spectro
- **News:** Cement Soaks Up Greenhouse Gases
- **Article:** Thermal Mapping & Thermal Validation in Pharma Industries
- Spectro Group of Companies

We invite you to a new paradigm created by Spectro to examine the resources on our website which includes our amplifying services using science to harness cutting-edge technology and experience the Spectro difference.

## Brief about Spectro

Spectro commenced to serve in the year 1995 and during the span of 20 years, Spectro Group of companies has created a globally recognized position in the field of Testing, Calibration, Auditing, Certification, Training, Inspection, R&D, Special Purpose Equipment Designing & Manufacturing and various other activities. Steadily building a reputation for reliability and fast turnaround, the organization grew rapidly and today we feel proud to have our presence all over the country.

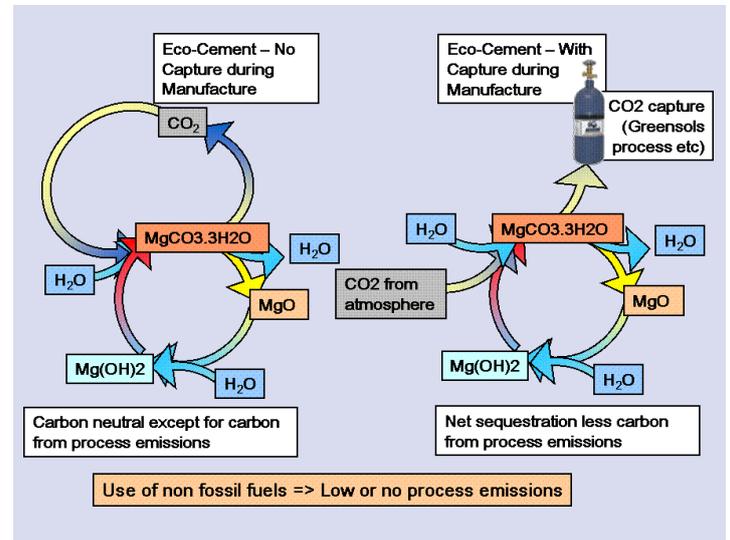
## Cement Soaks Up Greenhouse Gases

Cement is a climate villain. Making it is thought to produce nearly 5% of all global greenhouse gas emissions from fossil fuels and factories. But this building block of modern civilization may eventually suck some of that carbon dioxide back up which is enough to cancel nearly a quarter of the gases released during making of cement, according to a new study.



To make cement, limestone (calcium carbonate) is turned into lime (calcium oxide) by baking it at temperatures topping 1000°C. That conversion releases copious amounts of CO<sub>2</sub>- half cement's total greenhouse gases. The other half comes from fossil fuels used to heat cement kilns. The mortar, concrete, and rubble from demolished buildings can gradually absorb CO<sub>2</sub> through a process called carbonation. As CO<sub>2</sub> from the air enters tiny pores in the cement, it encounters a variety of chemicals and water trapped there. The ensuing reactions convert the CO<sub>2</sub> into other chemicals, including water. Still, just how much CO<sub>2</sub> the world's cement soaked up had never been estimated.

Recently, a team of researchers compiled data from studies of how cement is used around the world, including the thickness of concrete walls, the quality of concrete used in different structures, the life spans of concrete buildings, and what happens to the concrete after the buildings are torn down. Then they took things to the laboratory and calculated the carbonation rate in mortar and concrete in different settings-buried, in the open air, and enclosed in a room.



The results cast a different light on the cumulative impact cement has on the climate. The researchers estimate that between 1930 and 2013, cement has soaked up 4.5 gigatons of carbon or more than 16 gigatons of CO<sub>2</sub>, 43% of the total carbon emitted when limestone was converted to lime in cement kilns. That's more than 20% of the carbon soaked up by forests in recent decades.

Because cement effectively cancels part of its impact over time, the results might also help guide strategies for reducing its carbon footprint. Bigger gains could come from shifting away from fossil fuels to make the cement. If you have a choice-reduce fossil emissions or reduce cement emissions-you should prefer the fossil ones right now. In the future cement could even suck up more CO<sub>2</sub> than it produces. But that would take switching away from fossil fuels, and finding a way to capture and dispose of the gases coming from the limestone at cement factories.



Spectro has a well established civil laboratory which is fully equipped to provide testing services for all types of building material products, such as cement, concrete, fly ash, aggregates, soil, bricks, ceramics, etc. Besides providing consultation services, we also undertake on-filed testing and inspection.

## Thermal Mapping of Storage Rooms

In pharmaceutical industries, cold rooms, freezer rooms, incubators, sample rooms, refrigerators, raw material storage areas, stability chambers, packing areas and other temperature-controlled stores are required to be regularly validated for temperature and humidity. It also includes the laboratories, loading/unloading areas and the areas where temperature sensitive products are kept or even held when in transit. The objective of conducting temperature mapping study is to control and document the temperature variation within a specified storage area and locate the cold and hot spots. Thermal mapping is essential to identify the zones where remedial actions are to be taken, for instance, either by changing the air distribution to eliminate the cold and hot spots or retro-fitting new air distribution equipment to lower the temperature.

Subsequent temperature and humidity mapping exercises are not a single time job, it is to be performed periodically, say every three years to keep a check on compliance. It is important to carry out thermal mapping whenever a significant modification is done in the storage area or room or in case there is any modification done in the equipment. All these mapping exercises need to be completely documented to demonstrate the compliance to management as well as regulatory bodies. The allowed temperature range may vary from  $-25^{\circ}\text{C}$  to  $-10^{\circ}\text{C}$  or  $15^{\circ}\text{C}$  to  $25^{\circ}\text{C}$ .



Thermal mapping requires an adequate number of Electronic Data Logging Monitors that makes sure that the temperature distribution within the specified space is characterized sufficiently. Along with the data logger units, computer and software is required to store and check the data. Based on the data and analysis reports, appropriate recommendations are made for any remedial actions required to overcome the issues identified during the exercise.

## Thermal Validation of Equipment

Thermal validation is the process of validating / qualifying equipment and storage facilities to prove that they will create and maintain the temperatures they are designed for. The pharmaceutical industry is a highly regulated environment based on research, evidence, recordkeeping, and validation.



Like, autoclave is an essential tool used for sterilizing the surgical dressing, glassware, biohazardous waste; several types of microbiological media, etc. to follow the FDA, WHO & EU guidelines. This makes thermal mapping of these type of equipment, an essential activity in pharma and healthcare industries. Autoclaving is the most significant means of sterilization, all the autoclaves are mandatory to go through GMP process of validation or qualification.

Spectro's qualified validation consultants provide world-class thermal validation services to many renowned pharmaceutical and biotech companies and deliver world-class service to them.

# Spectro Group of Companies



**DnG Technologies Pvt. Ltd.** is one stop source for Automation services. We are promoted by a team of professionals with years of experience in the field of equipment designing and machinery automation.

- Cone Calorimeter
- UV Exposure Chamber
- Tensile Machine
- Cyclic Corrosion tester
- Xenon weather chamber

## Major Activities

Testing      Calibration      Training      Inspection      R&D      Automation      Reverse Engineering

- ⇒ Metals & Alloys
- ⇒ Non Destructive Testing
- ⇒ Rubber & Polymers
- ⇒ Food and Agro Products
- ⇒ Coal, Solid Fuels & Petroleum
- ⇒ Electrical & Electronics
- ⇒ Pharmaceuticals & Drugs
- ⇒ Building Materials
- ⇒ Minerals & Chemicals
- ⇒ Leather & Textiles
- ⇒ Water & Environment
- ⇒ Paper & Packaging Materials
- ⇒ Hazardous Substances
- ⇒ Clean Room Validation

## Our Joint Venture Labs

## Project Sites

Spectro Testing & Research Center Pvt. Ltd. (Jaipur)

Chennai (Tamil Nadu)

Spectro Research Lab Ventures (P) Ltd. (Kanpur)

Roorkee (Uttarakhand)

Spectro Testing (P) Ltd. (Jammu)

Durgapur (West Bengal)

Spectro SSA Labs (P) Ltd. (Mumbai)

Jaisalmer (Rajasthan)

Spectro Global Lab Pvt. Ltd. (Bhubaneswar)

Patna (Bihar)

Spectro Shyam Labs (P) Ltd. (Kolkata)

Ranchi (Jharkhand)



We will be pleased to receive your valuable queries, feedback and suggestions on our email ID: [newsletter@spectrogroup.com](mailto:newsletter@spectrogroup.com)

CIN : U74220DL1998PL C092698

## Central Lab & Head Office

E-41 Okhla Industrial Area  
Phase-II  
New Delhi-110020  
Ph:- 91 11 40522000, 41611000  
E-mail: [care@spectro.in](mailto:care@spectro.in)  
URL:- [www.spectrogroup.com](http://www.spectrogroup.com)  
[www.spectro.in](http://www.spectro.in)

## Main Laboratory

S-1 GNEPIP, Surajpur Industrial Area  
Kasna, Greater Noida, Phase-V  
Gautam Budha Nagar (U.P.)  
Pin Code: 201308  
Ph:- 0120-2341251/52  
E-mail:- [care@spectrogroup.com](mailto:care@spectrogroup.com)  
URL:- [www.spectrogroup.com](http://www.spectrogroup.com)