



## *Application Note #17*

### **Amplicon Decontamination utilizing Chlorine Dioxide Gas**

#### **ABSTRACT:**

Chlorine dioxide gas is proven effective against amplicons and can inactivate them in rooms or on equipment such as PCR readers so that there is no risk of cross contamination causing misreads on subsequent analysis. Chlorine dioxide, as a true gas, will reach all areas of your room and equipment surfaces including the inside of most equipment. After inactivation, analysis equipment can be used for testing with no risk of contamination or false readings.

#### **BACKGROUND:**

An amplicon is a piece of DNA or RNA that is the source and/or product of natural or artificial amplification or replication. Amplicons can be formed by various methods including polymerase chain reactions (PCR). With the rapid growth in DNA sequencing, the use of PCR equipment is expanding immensely. Their use in research is creating great gains in science and medicine but not without challenges. One challenge is the integrity of the results, as amplicons can accidentally contaminate parts of the PCR reader causing improper analysis of subsequent samples. To mitigate this problem, amplicons need to be eliminated completely from the PCR reader, including all cracks and crevices that they can get into. A primary method to accomplish this is with chlorine dioxide gas. The chlorine dioxide gas decontamination process that Decon-O-Logic utilizes was independently validated by two major PCR equipment manufacturers. The validation consisted of a series of cycles with varying chlorine dioxide gas dosages that were tested to achieve an inactivation of the amplicons. Verification that the equipment was not impaired during the treatment process was also confirmed.

#### **PROCESS:**

The decontamination process consists of placing the potentially contaminated equipment in a Decontamination Chamber and starting a chlorine dioxide gas decontamination process. This can either be done at the PCR user's site, the PCR equipment manufacturer's site, or sent to Clordisys for Contract Decontamination services. If sent to Decon-O-Logic, a report is issued upon completion, documenting the treatment including all process parameters.

#### **RESULTS:**

Decon-O-Logic does not perform post exposure testing nor do we guarantee inactivation since we are not knowledgeable of the actual make-up of any particular amplicon. In-house or outside testing labs should be utilized to verify the post exposure inactivation. Because of the proprietary nature of amplicons, Decon-O-Logic's guarantee is that the process parameters of the validated cycle will be achieved. Numerous PCR equipment inactivation projects have been performed and all customer post-treatment analysis have been satisfactory. All of the testing was performed under confidentiality agreements, so individual results cannot be shared. Decon-O-Logic does guarantee that the ppm-hour dosage that customers have verified to be effective will be achieved. Decon-O-Logic can work with your consulting and lab team to perform test exposures if requested.