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## **Green Label and Green Label Plus: What's Up in the Air?**

In 1990 the Environmental Protection Agency, along with a varied mix of consumer groups, spoke out in regard to their concerns for potential health risks resulting from exposure to volatile organic compound (VOC) emissions from new carpets. According to the Environmental Protection Agency (EPA) a volatile organic compound is any organic compound (excluding carbon dioxide, carbon monoxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonates) which participates in atmospheric chemical reaction (i.e., an air emission). The significance of VOC emissions may be better understood when one considers that VOCs have been linked to air quality issues such as smog and ground-level ozone gas formation.

Volatile Organic Compounds are considered to be very mobile and, because of their high vapor pressure they are found predominantly in our atmosphere. VOCs emanating from landfills are typically high, although air-dilution of landfill emissions is normally considered to be sufficient enough to protect nearby populations.

While claims have been made in the past in regard to new carpet emissions (mostly as a result of news media sensationalism) these claims were infinitesimally small when compared to the more than 1 billion square yards of carpet sold annually. And, while there has never been any validated health concerns associated with new carpet emissions, the suggestion that new carpet emissions could be detrimental to indoor air quality soon became a significant issue with the carpet industry.

Voluntary efforts were soon underway to address this concern by extensively studying new carpet emissions and the contributions they may make towards the quality of indoor air. These studies were designed to address carpet materials and manufacturing processes in an effort to dispel any misconceptions, myths, and mistruths the general public had in regard to the potential for health risks associated with new carpet. This was a job suited perfectly for the Carpet and Rug Institute (CRI).

The Carpet and Rug Institute is an incredibly impassioned international trade association whose on-going mission is to provide manufacturers, architects, interior designers, builders, dealers and consumers with information and guideline-type publications for the carpet industry based on scientific research and member input. Their goal is to enlighten interested parties how carpet can be used to enhance our way of living. CRI members consist of manufacturers and suppliers that represent over 90% of the carpet made in the United States.

In order to address growing questions about the use of carpet and the potential or problems associated with poor indoor air quality, in May 1992 the Carpet and Rug Institute (CRI) promulgated and implemented their Green Label (GL) Indoor Air Quality (IAQ) testing program. This program was designed to qualitatively recognize and quantitatively measure four targeted VOC compounds: styrene, 4-phenylcyclohexene (4-PC) and toluene, as well as provide a Total Individual Volatile Organic Compound (TVOC) emissions summary using high-resolution gas chromatography and/or gas chromatography/mass spectrometry. Since its introduction 13 years ago the CRI IAQ GL program has proven itself to unquestionably be the most reliable test methodology for carpet emissions analysis.

Environmentally responsible manufacturers who participate in this program and offer products with the Green Label certification have taken voluntary steps to reduce VOC emissions. By obtaining the Green Label the manufacturer's products and category of products have been tested and shown to meet the stringent criteria for this indoor air quality testing program.

The CRI IAQ test method, which is now identified by the American Society of Testing Materials as test method ASTM D 5116-97, is performed over a 24 hr. VOC collecting period in a small, airtight environmental chamber made of non-VOC emitting and non-VOC absorbing materials. Test samples used for this IAQ analysis are required to be randomly selected based on a series of carpet categories defined by their fiber type(s) and backing materials. Because carpet is a very low emitter of VOCs, test samples must be taken directly from the manufacturer's production line. These samples are required to be sealed immediately in an air-tight, VOC impermeable package and must be tested within a maximum of 48 hr from the time they're packaged [

VOC emissions are collected from self-sealing chamber outlet ports using thermal desorption (sorbent) tubes and the vapors are desorbed into a gas chromatograph outlet. Select, individual VOCs (IVOCs) are identified and quantified by gas chromatography/mass spectrometry by comparison to a mass spectral library of known VOC fingerprints. A match of 85% or better is required to confirm the presence and amount of the targeted VOC emissions. These emissions include Formaldehyde to show that it is not used in carpeting. It is not

uncommon to find traces of formaldehyde during this test simply because it is a naturally occurring substance commonly found in almost every environment.

During the Fall of 2003 word began to spread that carpet and other interior building materials sold for commercial use in the state of California would soon be required to comply with even more stringent emissions standards. These standards would be based in part by the California Department of Health Services (DHS) Indoor Air Quality Standard Practice for Testing of Volatile Organic Emissions from Various Sources Using Small Scale Environmental Chambers and the Collaborative for High Performance Schools (CHPS) Reference Specification for Energy and Resource Efficiency, Section 01350, Environmental Requirement for Indoor Air Quality. Section 01350 covers issues such as energy and water use, and is designed and intended to distinguish environmentally preferable, low-emitting materials for public health considerations. Section 01350 includes IAQ testing of paints, paneling, wall covering, ceiling tile, and furnishing. The practices of CHPS Section 01350 have since been adopted by several other states.

With the introduction of Section 01350 the Carpet and Rug Institute and its members took the steps necessary to upgrade the existing CRI IAQ Green Label test program in order for carpet to meet or exceed the requirements of Section 01350. Thus, on June 14<sup>th</sup> 2004 the CRI Green Label Plus (GLP) program came to being.

Unlike its predecessor, the GL IAQ program, that focuses on four "critical emissions," the more rigid GLP program, which uses the same test method protocol of its ancestor, the GLP criterion requires analysis on thirteen critical VOC emissions. The effort here is to even further reduce carpet emissions and to obtain more assurance of good indoor air quality in schools and office buildings (which may ultimately lead to healthier occupant).

Today manufacturers of floor covering adhesives and carpet pad are also using the GL and GLP emissions testing programs. With this in mind, facility managers, builders and other parties interested in obtaining assurance for good indoor air quality can rest assured that only a finite and harmless amount of new carpet emission have been released "up in the air" when they purchase carpets having the Green Label and Green Label Plus logo.