GEBAUER'S Spray and STRETCH®

Product Endorsed by American Physical Therapy Association.

APTA endorsement applies solely to Gebauer's Spray and Stretch® product and does not apply to the Spray and Stretch technique.

Gebauer's Spray and Stretch and the Environment

To address Gebauer customer questions and concerns regarding the effect of Gebauer's Spray and Stretch on the environment, Gebauer Company has compiled the following information on the product. Gebauer's Spray and Stretch is the non-ozone depleting replacement product for Gebauer's Fluori-Methane. Environmental concerns regarding ozone depletion and global warming of Gebauer's Fluori-Methane drove Gebauer to find a suitable replacement product that addresses those concerns.

To provide some background information, it is important to first characterize the environmental impact of Gebauer's Fluori-Methane. Fluori-Methane is made from two chemicals both of which are CFC's and are being phased out under the US EPA's Clean Air Act. Those two components, trichlorofluoromethane (85% of the product) and dichlorodifluoromethane (15% of the product) have ozone depletion ratings of 1.0 and both have significant global warming potential (GWP) values. As per the US EPA's Class I Ozone Depleting Substances Table published in the Federal Register on January 19, 1996, trichlorofluoromethane has a GWP of 4000 and dichlorodifluoromethane has a GWP of 8500.

The replacement product, Gebauer's Spray and Stretch, offers significant improvements in terms of its effect on the environment from Fluori-Methane in addition to being **non-flammable and non-toxic**. The primary component of Gebauer's Spray and Stretch (>90% of the product) is 1,1,1,3,3-pentafluoropropane and its secondary component (<5% of the product) is 1,1,1,2-tetrafluoroethane. Both of these chemicals are known as HFC's. These two chemicals have **no ozone depletion potential** and relatively **low GWP values**, and have been designated as non-VOC's (volatile organic compounds) by the US EPA. In fact, the US EPA lists both chemicals on its list of acceptable substitutes for ozone-depleting substances under the U.S. EPA's Significant New Alternatives Policy (SNAP) program.

In March of 2002, the Federal Register published the EPA's notice of acceptability of the primary component of Gebauer's Spray and Stretch under the SNAP program. As part of their assessment they look closely at the GWP in addition to its ozone depletion value. As stated above, 1,1,1,3,3-pentafluoropropane (commonly referred to as HFC-245fa) has

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an ozone depletion potential of zero and it has a GWP of 1022. This GWP is much lower than that of the ozone depleting substances that it is replacing. Specifically, the Federal Register states the following regarding the above referenced chemical:

> *"HFC-245fa reduces risk overall compared to the substances it replaces:*
> 1. *Is non-flammable and reduces the risk of fire compared to flammable aerosols,*
> 2. *Is less toxic than may of the non-flammable aerosol solvents, and*
> 3. *Has a GWP comparable to or less than other substitute aerosols and has no ODP [ozone depletion potential].*
>
> *Thus, we find that HFC-245fa is acceptable because it reduces overall risk to public health and the environment . . . ."*

In developing a replacement product for Fluori-Methane, Gebauer successfully meet a number of significant challenges:

- Spray and Stretch has **zero** ozone depletion potential.
- Compared to Fluori-Methane, we have significantly reduced the GWP to acceptable levels as defined by the EPA from around 4000 GWP for trichlorofluoromethane to 1022 GWP for 1,1,1,3,3-pentafluoropropane. Also, the smaller component of Spray and Stretch, 1,1,1,2-tetrafluoroethane has a low GWP of 0.285.
- Both constituents of the product have little to no known toxicity
- The chemicals offer excellent material compatibility with our aerosol container system.
- The product offers a cooling effect equivalent to Fluori-Methane.

In conclusion, Gebauer's Spray and Stretch is not only safe and effective but represents real environmental improvements to Fluori-Methane in terms of ozone depletion and global warming.