Method To Quickly Assess Antibacterial Capacity of Metalworking Fluids

February 5, 2019

Quaker Chemical and The University of Gent Partner to Present Breakthrough Method Using Flow Cytometry

CONSHOHOCKEN, Pa., Feb. 5, 2019 /PRNewswire/ -- Metalworking fluids are water- or oil-based liquids to cool and lubricate tools, work pieces and machines, inhibit corrosion and remove swarf. One of the major problems in the metalworking fluid industry is bacterial growth; however, a fast yet accurate method to evaluate and predict the fluid's antibacterial capacity is currently lacking.

Therefore, **Quaker Chemical Corporation** (NYSE: KWR) ("Quaker"), partnered with scientists from the Faculty of Veterinary Medicine at the University of Gent to develop this new tool. This protocol is based on flow cytometry to assess the antibacterial potential of newly developed cutting fluids independent of bacterial growth.

With this important asset, the following serious problems can be avoided:

- Bacterial enzymes can cause coolant degradation and corrosion
- Bacteria can form biofilms which hamper the functioning of machines and may cause filter and nozzle blockages
- Some bacterial by-products are toxic and present potential health risks for metalworking machine operators

Results of this novel method were compared to a bio-challenge test currently used in the metalworking industry and also to traditional plate counts. The results represent a proof-of-principle **that flow cytometry can reliably predict the antibacterial capacity of metalworking fluids within one day of incubation** with Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa and Proteus mirabilis. This is substantially faster than the current growth-based methods which can take up to 8 weeks.

Fred Hoogendoorn, Research Scientist, stated, "New regulations restrict the use of certain biocides and the market demands us to find alternative chemistries. This new technique, flow cytometry, has been instrumental in the development of our boron-free and formaldehyde-free product portfolio. It allows us to dramatically speed up development work, while offering more flexibility in the choice for microorganisms in our studies. It delivers quantitative data, which allows us to employ statistical techniques in optimizing the chemistry in our formulations. This really is a huge step forward."

"Flow cytometry, a powerful novel tool to rapidly assess bacterial viability in metal working fluids: proof-of-principle," has been published in the scientific journal The Public Library of Science ONE. The full scientific paper can be found here https://www.quakerchem.com/wp-content/uploads/articles/metalworking-general/journalpone0211583.pdf

For more information on the Quaker Chemical Metalworking product line, please visit:
https://www.quakerchem.com/industry/general-manufacturing/

About Quaker Chemical Corporation:

Quaker Chemical is a leading global provider of process fluids, chemical specialties, and technical expertise to a wide range of industries, including steel, aluminum, automotive, mining, aerospace, tube and pipe, cans, and others. For 100 years, Quaker has helped customers around the world achieve production efficiency, improve product quality, and lower costs through a combination of innovative technology, process knowledge, and customized services. Headquartered in Conshohocken, Pennsylvania, USA, Quaker serves businesses worldwide with a network of dedicated and experienced professionals whose mission is to make a difference. Visit quakerchem.com to learn more.

View original content to download multimedia:http://www.prnewswire.com/news-releases/method-to-quickly-assess-antibacterial-capacity-of-metalworking-fluids-300789897.html

SOURCE Quaker Chemical Corporation

Jessica Sabedra, Marketing Manager, sabedraj@quakerchem.com, T. 610.832.8503