

The humble chalk ready to get a makeover

By Sunderarajan Padmanabhan

Twitter handle: @ndpsr

New Delhi, May 1 (India Science Wire): In the era of tablets and ipads, the humble blackboard and white chalk may appear to be a thing of past, but it is not so. Millions of school going kids still look up to the blackboard for their daily lessons. Now Indian scientists are deploying high technology to improve the quality of the writing chalk.

Writing slates have been in use in India at least as early as the 11th century. Al-Biruni, one of the scholars of Islamic medieval era, had referred to the use of writing slates in his book, *Tarikh Al Hind* (History of India). He wrote that “Indians use black tablets for the children in schools, and write upon them along the long side, not the broadside, writing with a white material from the left to the right.”

The practice of writing on blackboard using white chalk continues to date as an important teaching aid in educational institutions despite the advent of computers and other modern tools of information technology. The expectation is that it shall continue well into the future.

According to an estimate, about 20,000 tons of chalk are consumed in the country every year, considering that thereabout one crore teachers and each of them could be using about two kg of chalk per year.

A main issue with writing chalk is that it is typically manufactured by small scale industries, with no formal production specifications. Poor quality is a major problem.

A group of Indian Scientists have sought to rectify the situation. They have fine tuned the production process and have come up with a model chalk stick - it is dust-free, does not break easily, and has high bulk density and smooth finish. Writings made with the chalk are also easy to read and can be wiped off nicely without leaving much of a trace when they are not needed any more.

The improved version of chalk was produced after a detailed analysis of various steps involved using latest scientific concepts and techniques. For instance, a thorough study was done before deciding on material to be used as binder which is needed to give necessary strength to chalk sticks. Scientists tried out a large number of material including urea, starch, guar gum, sodium silicate, and plaster of paris before zeroing in on the sodium salt of carboxymethyl cellulose.

The team of researchers consisted of Dr. Rajendra S. Thakur and Jignesh J. Shukla of Central Salt and Marine Chemicals Research Institute at Bhavnagar; Girish R. Desale of National Chemical Laboratory in Pune and Pushpito K. Ghosh of Institute of Chemical Technology, Mumbai. They have published a report on their work in the latest issue of journal *Current Science*. **(India Science Wire)**