Chromium dioxide (CrO$_2$) has been extensively used in the magnetic recording industry. However, it is its ferromagnetic half-metallic nature that has more recently attracted much attention, primarily for the development of spintronic devices. CrO$_2$ is the only stoichiometric binary oxide theoretically predicted to be fully spin polarized at the Fermi level. It presents a Curie temperature of $\sim 396$ K, i.e. well above room temperature, and a magnetic moment of 2 mB per formula unit. However an antiferromagnetic native insulating layer of Cr$_2$O$_3$ is always present on the CrO$_2$ surface which enhances the CrO$_2$ magnetoresistance and might be used as a barrier in magnetic tunnel junctions.