Representing chemical structures is a foundational concept in cheminformatics. Such representations are needed whenever computers are used to handle structures, for example for chemical databases, drug design, environmental property prediction and toxicological analyses. Traditional identifiers such as the Beilstein or Chemical Abstracts “registry numbers” do not contain structural information, so a system was needed to provide a machine-readable form for chemical structures. By 2000, such systems were available, but they were proprietary and had unclear standards, limiting their use. The International Chemical Identifier (InChI) was developed at the US National Institute of Standards & Technology (NIST), working with IUPAC, to provide an unambiguous, public standard for structure representation. It was quickly adopted by both private and public databases, and can now be generated within ChemDraw and other drawing software. This presentation will explain how the InChI, and the related “InChIKey” are now being used in online databases, such as ChemSpider, as well as various government databases. It will also describe their use in a chemical education website, to allow students to input structures for online chemical structure searches and quiz answers.