Metric Errors in the AP Stylebook

I am not a journalist. As a reader and U.S. Metric Association member, I am disturbed by improper metric usage in the media. Complaints to editors and journalists invariably result in them blaming the AP Stylebook for "requiring" improper usage. As a result, I have reviewed various editions (2000, 2005, and 2009) at public libraries and purchased the 2011 edition to determine what it says and whether it is really AP's fault.

Many of the AP articles on metric usage are correct. However, there seem to be at least seven issues worth correcting:

- **Bibliography**: No authoritative metric reference, consider NIST SP330
- **Kelvin**: Offset to degrees Celsius is incorrect, should be 273.15 degrees
- **Kilometer per hour**: Abbreviation "kph" is wrong, should be "km/h"
- **Kilowatt hour**: Abbreviation "kwh" is wrong, should be "kWh"
- **Liter**: Definition is obsolete, properly defined as 1 cubic decimeter
- **Nuclear terminology**: The "standard" units given are obsolete and need update
- **Track and field**: Needs correct metric examples for field events

The third, sixth, and seventh items are the most problematic in the media. Each of the seven is discussed in detail below.

Bibliography

It is hard to ensure the accuracy of the metric articles without an authoritative metric reference. The Constitution grants to Congress the authority to fix the weights and measures of the United States. Congress delegates it to the Secretary of Commerce, and specifically to the National Institute of Standards and Technology (NIST) within the Department of Commerce.

NIST publishes Special Publication 330, The International System of Units (SI), as the official interpretation of the metric system for the United States. This is available in hardcopy and a free pdf download. I recommend it as your fundamental reference on the metric system. (Ref: http://physics.nist.gov/Pubs/SP330/sp330.pdf)

You may also consider:

- The SI Brochure, published by the BIPM in France. It is "essentially equivalent" to SP 330, but uses British English
- NIST SP 811, Guide for the Use of the International System of Units
- NIST Handbook 44, Appendix C and NIST SP 1038

Kelvin Scale

The article states that zero on the kelvin scale is minus 273.16 degrees Celsius, and to add 273.16 to the Celsius temperature to convert to Kelvin. This is incorrect. The kelvin is defined by absolute zero, and the triple point of water, 273 .16 K or 0.01 °C. The proper offset between the kelvin scale and degrees Celsius is therefore 273.15 degrees, not 273.16 degrees. (See NIST SP330, section 2.1.1.5). NOTE: The Fahrenheit value of

minus 459.67 °F for 0 K must have come from an independent source as it is correct and not the value obtained by conversion of -273.16 °C.

The article in the 2000 edition was a mish-mash of correct and incorrect values. By the 2005 edition, the correct values had been removed in edits, and the article has not been revised further.

Kilometer per hour

The article on kilometer correctly shows the symbol is "km," and the article on kilometer per hour incorrectly states "kph" is acceptable in all uses. The article (and improper abbreviation) for kilometer per hour did not exist in the 2005 or 2000 edition.

The correct symbol for kilometers per hour is "km/h," not "kph." The "short forms" of SI units are symbols defined rigorously and uniformly across languages and are not abbreviations made up at will. See NIST SP 330, Section 5.1. Paragraph six comments generally on inappropriate random abbreviations, and paragraph five on the symbol rules for compound units obtained by division. You can also see the U.S. GPO Style Manual, section 9.62, which correctly shows km/h.

Note that Federal safety standard FMVSS 101 requires that U. S. vehicles have mile per hour speedometers labeled MPH. However, a secondary kilometers per hour scale is optionally permitted, but it must be labeled km/h (upper case KM/H is allowed if lower case is not available). This creates the ridiculous situation in which automotive writers must use kph in articles to comply with AP style, using a unit nomenclature that is illegal on the speedometer of the car they are writing about. Also, metric speed limit signs are rare in the U. S., but when used, the MUTCD (Manual for Uniform Traffic Control Devices) requires the "km/h" nomenclature. When Canada and Mexico show the units on a speed limit sign, they use km/h not kph. A driver never sees "kph" except in media articles about cars and then he looks in his car and sees km/h.
(Ref: http://frwebgate.access.gpo.gov/cgi-bin/get-cfr.cgi?TITLE=49&PART=571&SECTION=101&YEAR=2000&TYPE=PDF
See table 2, and its footnote #5)

Further note that the National Hurricane Center has historically used KM/HR when they report metric storm and wind speeds. They have announced, beginning May 2011, their hurricane products will use KM/H for the 2011 hurricane season (Their products use upper case "Teletype format," lower case is not available.)
(Ref: http://www.nhc.noaa.gov/pdf/updates_2011.pdf See item #4)

If you can not step away from your error in the use of "kph," you should at least allow automotive writers and science writers to use the correct SI symbol, "km/h" as an approved alternative.

Kilowatt hour

The correct symbol for the watt is "W" as noted in your articles on the watt (which correctly shows kW and MW for kilowatt and megawatt). Therefore the correct symbol for the kilowatt hour is kW·h or kWh, not kwh. The symbol is capitalized because the unit is named for a scientist. See NIST SP 330, Section 5.1. You can also see the U.S. GPO Style Manual, section 9.62, which correctly shows kWh.

Liter

You incorrectly define the liter as 1 kilogram of water at 4 °C. This was the definition from 1901-1964, but was abrogated in 1964, and the liter was redefined as a "special name" for 1 cubic decimeter (1000 cubic centimeters), exactly. This is the same definition as it had prior to 1901. It is very close to 1 kg of water at 4 °C, differing by about 28 parts per million. But it is a matter of which is the official definition and which is an approximate but useful relationship. See NIST SP 330, section 4.1, and page 61 for the text of Resolution 6 of the 12th CPGM, 1964.

Nuclear Terminology

The given "standard" units of measure, rad, rem, and roentgen, are actually obsolete metric radiation measures. The modern SI units are the gray, sievert, and coulomb per kilogram (in air). The article should be updated. Many journalists had units problems reporting radiation readings following the Japanese reactor problem. See NIST SP 330, section 4.3 and Table 10. Note that NIST SP 330 allows, but strongly discourages, use of the obsolete units. As neither set of measures is very well understood by the general public, there is little value in confusing the issue by bouncing back and forth between old and new units. Simply use the new preferred units, and explain them to the degree necessary.

Track and Field

In the Sports Guidelines section, the Track and Field article gives only foot-inch reporting guidelines for field events (jumping, throwing). At the collegiate level and above, all field events are officially measured in metric, even in the U.S. Any foot-inch values are obtained by approximate conversions, using three different conversion tables for different events. It is not always possible to accurately recover the real value of the performance from the foot-inch values due to rounding. The guidelines should require reporting metric if metric measurements were taken, and optionally report foot-inch conversions if necessary (similar to weightlifting). The metric results are always rounded down to the lesser whole centimeter and reported in meters to two decimal places, for all field events. (see USATF site for further information).