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## Letters

### Monoxide mechanism

In "Monoxide heart risk" (SN: 11/25/89, p.342), you state that carbon monoxide inhibits the release of oxygen from red blood cells to body tissues. Carbon monoxide does interfere with the distribution of oxygen to tissues, but it does so by a different mechanism, based on hemoglobin's greater affinity for carbon monoxide than for oxygen. This means hemoglobin will preferentially take up carbon monoxide and will ignore oxygen, forming fewer molecules of oxy-hemoglobin. Thus, less oxygen becomes available in red blood cells for distribution to tissues.

F.A. Johnson  
Durham, N.C.

**As a chemist** I would say carbon monoxide combines with hemoglobin in red blood corpuscles, reducing the total number available to carry oxygen to all the cells in the body and

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Cover: Renaissance craftsman Christopher Schissler created this remarkable sundial in 1578 to simulate a biblical miracle in which the prophet Isaiah commands shadows cast by the sun to move backward. A 19th-century reconstruction of the sundial erred by putting the sundial's indicator string in the wrong position, as shown in the photograph. A new reconstruction puts the string in its rightful place and demonstrates the ingenious method Schissler used to make shadows go backward. (Photo: Owen Gingerich)



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thus causing chemical asphyxiation. Logically, any gases that behave similarly will have the same effect — whether hydrogen cyanide, hydrogen sulfide, higher levels of carbon dioxide or lower levels of oxygen (at high altitudes). Even donating blood could produce the effect.

The maximum allowable concentrations set for the workplace are for healthy people; anyone with coronary disease should be told their tolerance may be lowered.

J. Alden Erikson  
Gibsonia, Pa.

### 'Abuse' ambiguous

I have noticed that media reports implicitly define "abuse" differently for different drugs: For alcohol, it means physical addiction or inebriation while on the job or driving; for any illegal drug it means "use"; and for tobacco it is never used. While such inconsistent use of a term may have propaganda value,

it renders the word "abuse" useless in any objective description.

For this reason, I found "Marijuana mangles memory" (SN: 11/18/89, p.332) much less informative than previous SCIENCE NEWS articles on the subject of drug effects. Those suffering memory loss were "marijuana abusers in a drug treatment program," but since quantity and frequency of consumption vary widely among users, and since "abuse" is an imprecise term, this tells us little. Quantity and frequency of use and other drugs used should have been specified.

Russell Williams  
San Jose, Calif.

*All nine teenagers in the marijuana group met the criteria for drug abuse as set forth by the Diagnostic and Statistical Manual of Mental Disorders III, Revised, the standard reference for psychological diagnosis. Subjects smoked marijuana an average of 5.9 times per week.*

— A. McKenzie

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