

SAFETY & HEALTH BULLETIN

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Year 2000 Effect on Computer System Software and Electrical Devices Containing Microchips

The purpose of this Bulletin is to advise all Departmental elements of a potential health and safety vulnerability so that appropriate actions can be taken to assess and correct any vulnerability that may exist throughout the complex.

On March 20, 1997, the U.S. House of Representatives' Subcommittee on Government Management, Information and Technology and the Subcommittee on Technology conducted joint hearings on concerns about potential health and safety consequences associated with the failure of electronic devices containing embedded microchips. These hearings highlighted a specific aspect of the broader concern that computer software used by the Federal government or its contractors may not work correctly starting in the year 2000.

The year 2000 issue may manifest itself in several ways. In some instances, where software uses the last two digits of a year to perform calculations or operations, the computer might incorrectly interpret "00" as the year 1900, rather than 2000. In the case of an electrical device that contains an embedded microchip, the electrical instrument may fail to operate properly. For example, if a microchip is programmed to shutdown an elevator system if preventive maintenance is not performed in a 3-month period, and that microchip has a year 2000 problem, when January 1, 2000 arrives, the elevator system might automatically shut down, regardless of when maintenance was last performed.

The year 2000 gives reason for concern in many areas. For example, software used to determine exposure may perform date related calculations incorrectly. Microchips in devices that perform

monitoring, surveillance, or testing functions could also be affected. Instruments purchased commercially may also contain microchips susceptible to the year 2000 problem, e.g., control and communications equipment sometimes contain microchips on which performance and reliability are dependent. Problems could also occur in software, systems, or devices developed by the Department or its contractors.

To avoid any potential risks and/or consequences that could result from the year 2000 problem, all DOE sites and facilities should be advised to examine their systems, software and electrical devices for year 2000 vulnerability. Your information management community is probably already working with the Department's Year 2000 Project team to provide support for year 2000 compliance for Mission-Essential Computer Systems (Reference: Memorandum, May 30, 1997, S. W. Hall, Jr., Chief Information Officer, to All Department Heads). The goal of the information management community is to ensure that all mission-essential computer systems will operate properly during the century date change.

The Department's progress in preparing these computer systems is tracked by a number of milestones established by the Office of Management and Budget. The status of the Department in meeting these milestones is reported to the Secretary and the Office of Management and Budget on a quarterly basis. To identify your Year 2000 Coordinator, view the Department's Year 2000 Web Site, or contact Cliff Hoyt, the project leader, at 301-903-5237. The web site provides background and status information on Departmental year 2000 activities. The address is:

<http://websparc.hr.doe.gov/year2000/>

However, everyone must realize that year 2000 issues may also affect electrical devices and infrastructure, such as: phone, lighting, alarm, monitoring, HVAC systems, etc. Failures in these devices may pose health and safety risks or consequences as well. Therefore, all Departmental elements are advised of the need to ensure that site managers: (1) review all aspects of their facilities for year 2000 issues with embedded microchips to ensure they have a good understanding of any health and safety vulnerabilities, (2) are responding appropriately, and (3) have developed Corrective Actions where appropriate. If these devices are not being addressed by the information management community, at a minimum, the following actions should be taken:

1. The acquisition of electrical devices that contain microchips must require that the product conform to the January 2, 1997, Interim Federal Acquisition Regulation (FAR) on Year 2000. Compliance can also be achieved with the September 11, 1996, recommended year 2000 contract language developed for the Chief Information Officer (CIO) Council.
2. Where health and safety vulnerabilities exist, suppliers or manufacturers of the electrical devices should be questioned for validation of year 2000 compliance or remedial actions. Where vendor documentation of compliance or remedial action is not possible, the existing devices should be tested and those that fail testing removed from service or replaced, as appropriate.
3. A copy of any Corrective Actions planned in regard to year 2000 health and safety vulnerabilities (where not already being addressed by the information management community) should be submitted to the Director, Office of Information Management, Office of Environment, Safety and Health (EH-72) for inclusion in the summary of Departmental actions that is required for the CIO's quarterly status reports to the Office of Management and Budget (OMB) and Congress. The following milestones are being tracked in the OMB report:

11/15/97 Assessment Completed — Develop a Corrective Action plan for each vulnerability resulting from the assessment of risk related to the embedded microchip problem.

09/15/98 Renovation Complete — Complete renovation for all identified devices. An example of renovation complete would be obtaining the

replacement devices prior to extensive testing. A Corrective Action which does not complete renovation by this date will be reported to OMB and specific information must be provided to indicate how this action will be brought back on schedule.

02/15/99 Validation Complete — Successful execution of a test plan to demonstrate compliance. A Corrective Action which does not complete validation by this date will be reported to OMB and specific information must be provided to indicate how this action will be brought back on schedule.

07/15/99 Implementation Complete — Each device mentioned in the Corrective Action must be year 2000 compliant and in production by this date. A Corrective Action which does not complete implementation by this date will be reported to OMB and specific information must be provided to indicate how this action will be brought back on schedule.

For a more detail understanding of the year 2000 issues, site, facility and operations managers may refer to the following web sites:

<http://www.itpolicy.gsa.gov>

This site provides a directory of year 2000 information, including the relevant Congressional Hearing reports, the recommended year 2000 warranty language for contracts or purchase orders, standards, and links to other year 2000 resources.

<http://www.mitre.org/research/y2k>

This site provides technical discussions of the year 2000 problem and answers to frequently asked questions.



This Safety & Health Bulletin is one in a series of publications issued by EH to share occupational safety and health information throughout the DOE complex. To be added to the Distribution List or to obtain copies of the publication, call 1-800-473-4375 or (301) 903-0449. For additional information regarding the publications, call Mary Cunningham at (301) 903-2072.