

## Excerpt from "Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990–2006"

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Full report and additional information is available at [www.antichips.com/cancer](http://www.antichips.com/cancer)

### Johnson, K., 1996

Foreign-body tumorigenesis: Sarcomas induced in mice by subcutaneously implanted transponders. *Toxicologic Pathology*. 1996; 33(5):619. Abstract #198.

Author(s)	# of Animals	Species	Study Length	Developed Cancer
Keith Johnson, 1996	2,000	mice	2 years	~1.0%

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***"Investigators using. . . implanted devices need to be aware of foreign-body tumorigenesis [cancer development] when evaluating the results of long term studies using mice."***

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#### Summary of Study

A two-year Dow Chemical study of 2,000 mice found an approximately 1% incidence of sarcomas surrounding microchip implants used for identification purposes. The tumors appeared in both control and experimental animals. This was consistent with a diagnosis of foreign-body-induced sarcoma.

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#### Study design and key findings

This report was based upon a series of five oncogenicity (cancer) studies involving 2,000 B6C3F1 mice and CD1 ("albino") mice. Each study consisted of 400 mice that had been implanted with a microchip for identification purposes: 300 of the mice received test chemicals in their feed at low, medium, and high dose levels, and 100 control mice received no test chemical. After two years, just under 1% of the mice developed "incidental" subcutaneous sarcomas that incorporated the implanted microchip. Both treated and control animals developed the tumors at approximately the same rate, ruling out the test substance as the cause of these tumors.

The tumors were identified as connective tissue cancers, or fibrosarcomas, and appeared typical of foreign-body-induced sarcomas. The tumors typically appeared after more than one year post-implantation. Only gross lesions were examined.

In a telephone interview, Johnson also reported occasional adverse events related to the microchips, which were implanted between the shoulder blades. "Occasionally some would be inserted too deep, the needle that put them in was probably held at the wrong angle. We had a few early in the studies that would migrate out if the wound wasn't healing properly, and we had a few that gave up functioning, but those were all pretty rare events," he said.<sup>1</sup>

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#### Study Details

- The research was conducted at the Toxicology Research Laboratory, The Dow Chemical Company, Midland, MI by Keith Johnson.

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<sup>1</sup> Keith Johnson, personal communication (telephone interview), October 13, 2007.

- Animals used in the study were B6C3F1 mice and CD1 ("albino") mice.
  - Microchip implants were from BioMedic Data Systems Inc.
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