

Spermicidal effect of latex gloves during semen collection in the boar: A case report

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A producer with a 200-sow unit reported a problem that included sows not-in-pig at farrowing time in April 1991. An increase in the incidence of abortions, mummified fetuses, or vaginal discharges was not evident. The breeding herd was placed on tetracycline (400 grams per ton feed, 444 g/tonne feed). A serological screen for six strains of leptospira (*Leptospira pomona*, *L. icterohaemorrhagiae*, *L. grippityphosa*, *L. canicola*, *L. bratislava* and *L. hardjo*) and encephalomyocarditis virus (EMCV) was submitted. Although suspicious antibody titers were detected, clinical signs and records analysis did not support their importance.

The problem was limited to sows of at least one parity, which were bred exclusively by artificial insemination (AI). Collection and handling of semen and insemination followed accepted guidelines. However, semen analysis revealed that one of the two heavily used boars had immotile sperm. This boar was culled in April, 1991 and the problem assumed to be solved. However, the owner, now more aware of semen evaluation, found in May 1991 that seven of the eight boars assigned to the next breeding group ejaculated semen in which the sperm were not motile. We contacted Dr. Larry Evans, Iowa State University, who asked whether latex rubber gloves were used during semen collection. He had found a certain brand of latex gloves to be spermicidal.¹ Latex gloves had been used on this farm since December 1, 1990. When a boar previously believed to be sterile was collected with the bare hand, sperm motility was normal. When sections of a latex glove (Cypress Corp., Cleveland, Ohio) were mixed with an aliquot of the semen, all sperm were dead within seconds. Use of the gloves was discontinued on the farm in May 1991, and fertility returned to levels similar to those considered normal for the farm before December 1990 (Figs 1-2).

We concluded that the increased numbers of sows not-in-pig at farrowing time from 12/1/90-5/3/92 were due to poor semen viability resulting from AI after collecting semen with

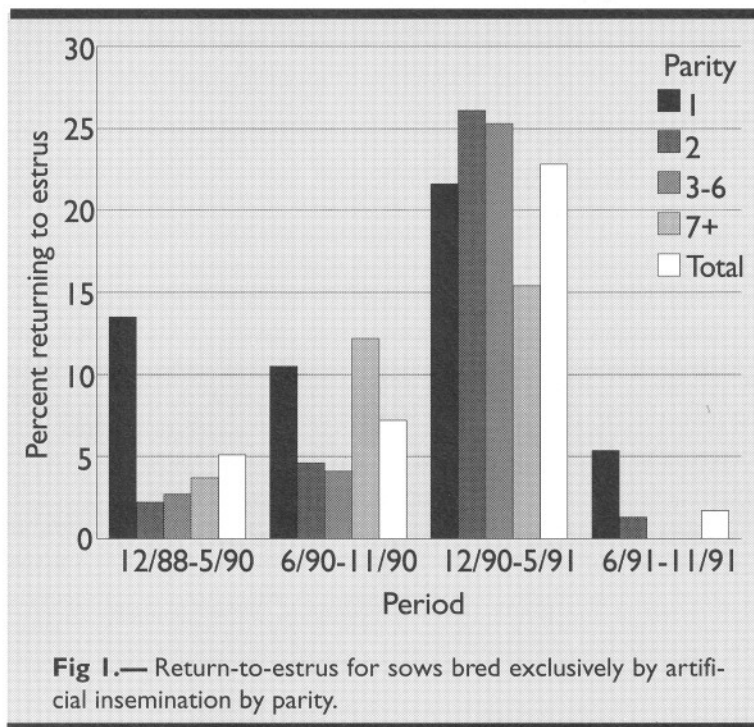


Fig 1.— Return-to-estrus for sows bred exclusively by artificial insemination by parity.

latex gloves (Fig 1). There was a significant increase in the number of sows that returned to estrus in 18-24 days from 12/1/90-5/31/91, which is compatible with a scenario of lower conception rates due to poor semen quality (Fig 2).

Subsequently, further studies were conducted in which semen was collected with this same brand of latex glove and a vinyl examination glove (Travenol™, Travenol Labs, Inc. Deerfield, Illinois). When the semen flowed into the collection thermos without contact with the latex glove, sperm motility was normal. However, when the semen flowed over the latex glove, but not the vinyl glove, sperm motility was virtually zero. Washed or unwashed pieces of the used latex glove mixed with an aliquot of motile boar semen failed to inhibit sperm motility. Apparently the spermicidal compound was fairly easily removed.

Manufacturers acknowledge that rubber compounds may be spermicidal in different ways. The manufacturing process may use a spermicidal mold-release compound or a spermicidal curing agent. In the former case, the spermicidal

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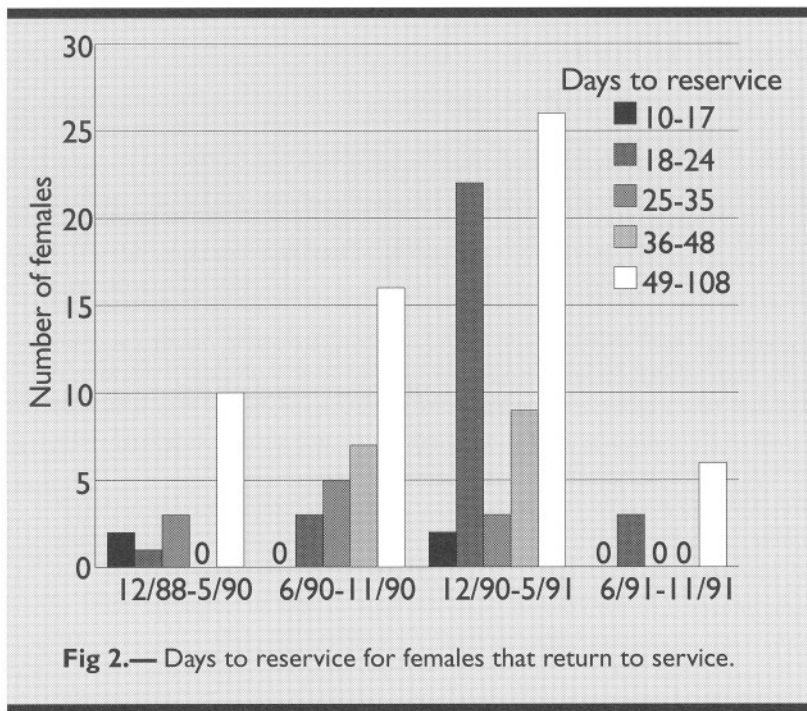


Fig 2.— Days to reservice for females that return to service.

effect can be removed by washing, in the latter case it cannot. Additionally, the powder on latex as well as on vinyl gloves may be toxic to sperm.

Rubber also comes in contact with semen in the form of liners for artificial vaginas and plungers for disposable syringes and Melrose's spirette. There has been no reported problem with Melrose's spirette. Plastic tubes used without problems for bovine semen were found to be toxic to dog semen at the University of Minnesota.² Synthetic or rubber products should be used cautiously with semen:

- avoid latex gloves;
- wipe off or wash vinyl gloves before using them for semen collection;
- test syringes used for semen collection for a spermicidal effect;
- microscopically evaluate semen for motility after it makes contact with gloves and other equipment used in AI;
- assess management procedures, determine return-to-estrus, and perform pregnancy testing to limit reproductive failures.

References

1. Ko JCH, Evans LE, Althouse GC. Toxicity effects of latex gloves on boar spermatozoa. *Theriogenology*. 1989, 3:1159-1164.
2. Personal communication with Shirley Johnston, 1984. University of Minnesota.

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