

PORK SAFETY

Title: Developing Standardization Procedures & Conducting Product Testing for Veterinary-Use Hypodermic Devices – **NPB #00-146**

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Abstract

Needles from six manufacturers were either donated or purchased for evaluating overall static and dynamic strength. Needle assemblies ranging in gage from 22, 20, 18, and 16 and needle lengths ranging from 0.50, 0.75, 1.00, and 1.50 inches were acquired. Hub materials consisting of polypropylene only, polypropylene with an aluminum insert, aluminum, stainless steel, and brass/nickel/chrome composite were tested. In total, 83 needle assemblies were tested.

Specialty testing equipment was developed to conduct the trials for this study. Three basic tests were completed, two designed to test overall static strength and one designed to test strength with simulated animal movement. Three replications of both static tests were conducted and twelve replications of the dynamic test were conducted. The over-riding goal was to provide a series of guidelines that could be used to assess needle/hub assembly performance in the field based on data collected in a controlled laboratory setting.

The major focus of this study was to determine characteristics of needle/hub assemblies that result in both desirable and undesirable failure modes in the field. An undesirable needle failure is one where the needle physically fractures after a single needle-bending event, or, a failure that involves a permanently deformed needle that could be straightened and reused. A desirable needle failure is one where, upon failure, no possibility exists for reusing the needle.

A procedure was developed that relates static testing results to anticipated failure modes expected in the field. This procedure, using a newly developed variable called the Rigidity Rating (RR) can then be used, it is hypothesized, to predict “desirable” or “undesirable” field failure conditions. Using this procedure, 100 percent of the desirable failures actually observed during simulated animal movement testing were predicted using the RR. More work is needed to further develop and refine this technique.

These research results were submitted in fulfillment of checkoff funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer reviewed

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