

TSP Study – Stage IV

Objective: To determine the influence of TSP on *E. coli* counts and incidence through the chilling process when carcasses are individually chilled.

Experimental Design:

Material: Sterile shaker bags
Sterile gloves
Sterile specimen containers
Sterile disposable pipets
Permanent water resistant markers
Coolers
Wet Ice
pH meter or pH paper strips
Chlorine test paper strips
0.2N Hydrochloric Acid (HCl)
0.1N Sodium Hydroxide (NaOH)
400ml sterile Butterfield's Phosphate Buffer solution
3M *E. coli* petrifilm
Sterile dilution blanks
Product totes
Heavy duty garbage bags
Alcohol swabs
Chlorinated chill water

Sample #: 30 rinses Post-TSP no chill (post Inside Outside Bird Wash),
30 rinses Post-TSP Post-Chill (individually chilled)
Total Number of Rinses = 60
Total Number of Samples = 60

Sampling dates: Collect samples over one day of production.

Methods:

- Whole bird carcass rinses will be performed at two designated sites along the production line. Two bird carcasses side by side on line will be pulled post-TSP (drip time of ~5 minutes on line) and designated as:
 1. post-TSP rinse to be pH adjusted
 2. post-chill rinse (post-TSP each bird chilled individually in prepared "tank")
- Rinses should be designated as a pair in regards to reporting results for comparison.

Note: If possible, allow approximately five minutes of on-line drip time after TSP application before collecting Post-TSP carcasses. If a five-minute on-line drip time is not possible remove carcasses from the line and place in a sanitized stationary shackle for approximately five-minutes (after TSP application). After necessary hang time, rinse bird with 400ml Butterfield's.

Post-TSP Birds

- Carcasses will be collected aseptically using the approved Mega-Reg collection method of an inverted sterile shaker bag or sterile gloves (change after each bird).

- 400ml of refrigerated Butterfield's Phosphate Buffer solution will be aseptically poured inside and outside the carcass and rinsed. Close bag to prevent leakage and shake for one minute in a one-foot arc. Aseptically transfer rinse back into the original Butterfield's container.
- Discard all but ~100ml of the Post-TSP rinse and adjust the pH to the level of 6.8 +/- 0.2 with 0.2N HCl or 0.1N NaOH.
- Carcass rinses are to be kept chilled on wet ice or refrigerated until transported to the plant lab or outside lab for setting.
 1. All Post-TSP pH adjusted rinses will be set on 3M *E. coli* petrifilm.
 2. Set a media and positive control with samples.

Post-TSP Individually Chilled Birds

- Carcasses will be collected aseptically using the approved Mega-Reg collection method of an inverted sterile shaker bag or sterile gloves (change after each bird).
- Carcasses will then be placed in their own chill "tank". Each chill "tank" will contain ~10ppm of Total Chlorine. The chill "tank" will be set up as follows: product tote lined with plastic, chipped ice layer, large heavy duty garbage bag containing approximately five gallons of chill water, ice layer.
- Carcasses will be held in chill "tank" for approximately seventy minutes and agitated periodically to mimic actual chill processes.
- After appropriate chill time, the internal temperature of each carcass will be checked aseptically to verify internal temperature of <40°F. If appropriate chill temperature has been reached, carcasses will be removed aseptically using the approved Mega-Reg collection method of an inverted sterile shaker bag or sterile gloves (change after each bird).
- 400ml of refrigerated Butterfield's Phosphate Buffer solution will be aseptically poured inside and outside the carcass and rinsed. Close bag to prevent leakage and shake for one minute in a one-foot arc. Aseptically transfer rinse back into the original Butterfield's container.
- Carcass rinses are to be kept chilled on wet ice or refrigerated until transported to the plant lab or outside lab for setting.
 1. All Post-Chill rinses will be set on 3M *E. coli* petrifilm.
 2. Set a media and positive control with samples.

Reporting Results:

Submit the raw data (not log transformed) of the whole bird carcass rinses performed at the designated sites in the Excel spreadsheet format provided (see attached file) to spretanik@chickenusa.org.

Day Test Log # Site Treatment Coliforms* *E. coli**

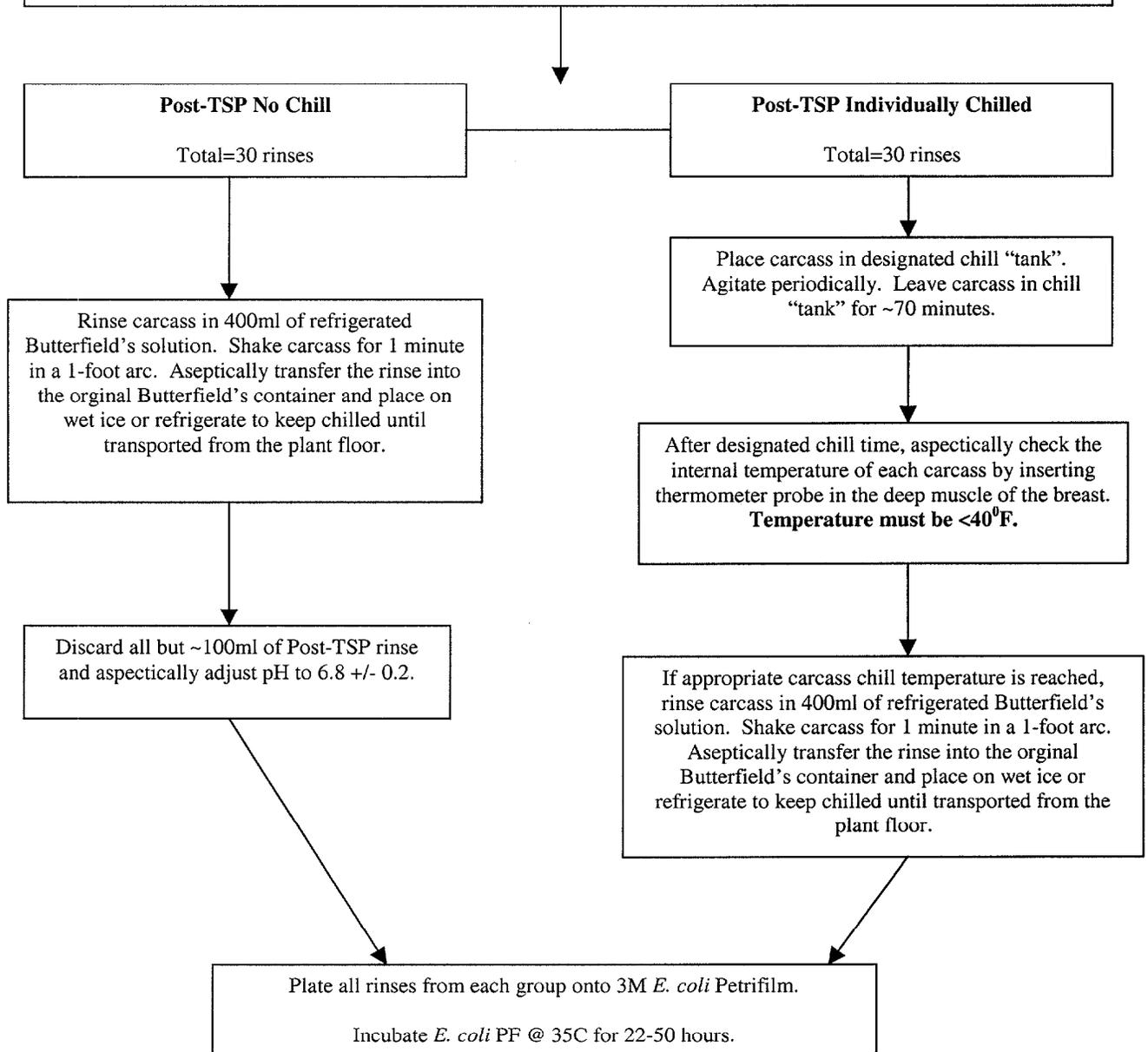
***Units:** cfu/ml=colony forming units per milliliter

NOTE: Data may be summarized with average cfu/ml Total Coliforms and *E. coli* in each sample type and the incidence level of *E. coli* in percentage in each sample type.

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From the designated sample site Post-TSP with a drip time of ~5 minutes, aseptically collect two whole bird carcasses (side by side on-line). A carcass will go to one of the two treatments: post-TSP no chill or post-TSP chilled individually. Repeat 30 times.

Note: Each pair of birds should be linked together in the reporting of results. eg. 1a=bird 1 chilled and 1b=carcass 1 post-TSP pH adjusted no chill.

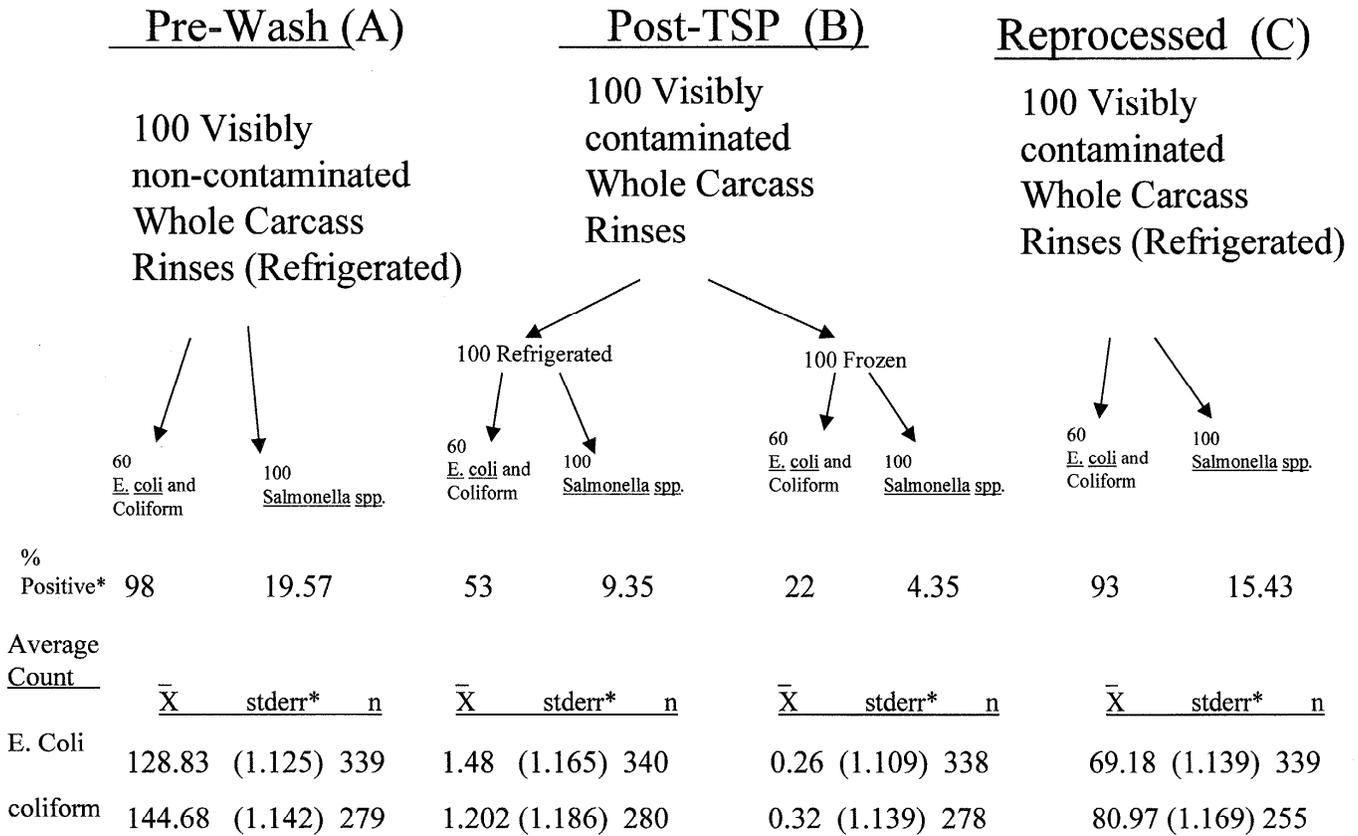


REGULATORY CHANGE TO ALLOW ON-LINE POULTRY REPROCESSING

Amendment to 9 C.F.R. 381.91--adding a new subsection, as follows:

"(c) Notwithstanding the provisions of subsection (b) of this section, any carcass of poultry accidentally contaminated during slaughter, but determined to not be grossly contaminated, with digestive tract contents may remain on the main processing/slaughter line and be promptly reprocessed while on-line through the application of a substance or a processing system that has demonstrated, with statistically significant validating data generated under conditions of in-plant commercial operation, the ability to reduce prechill incidence rates of Salmonella to less than 0.5% and to reduce prechill incidence rates for Escherichia coli Biotype I to less than 1%."

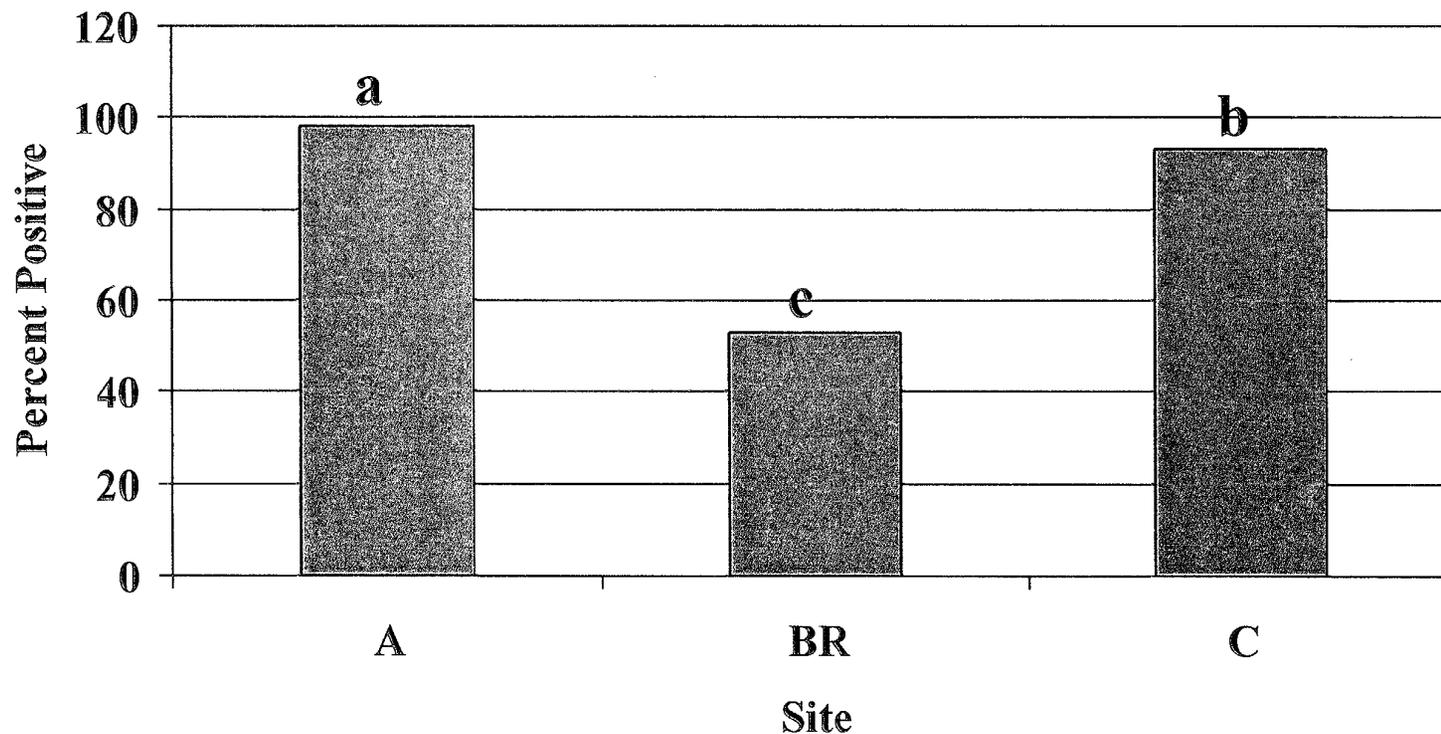
Figure 1. A schematic of the sampling plan and sample treatment for Stage II.



* Percent Positive for E. coli and Salmonella spp.; All procedures were standard Mega Reg protocols.

*Standard errors are in parentheses.

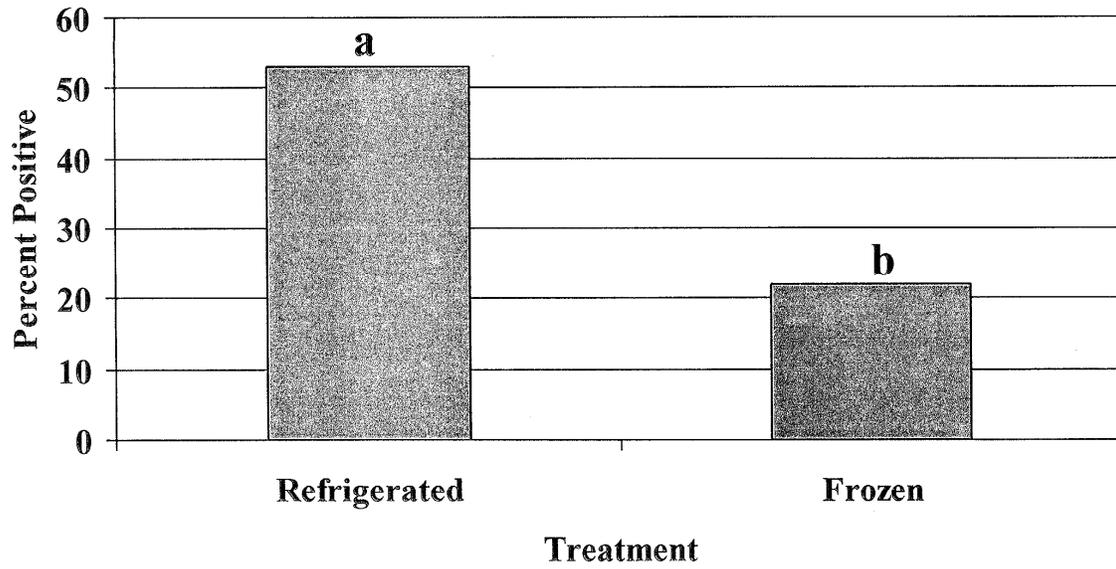
Percent E. coli Positive for Refrigerated Samples by Site and Treatment



abc: Sites with different letters are significantly different ($p \leq .05$)

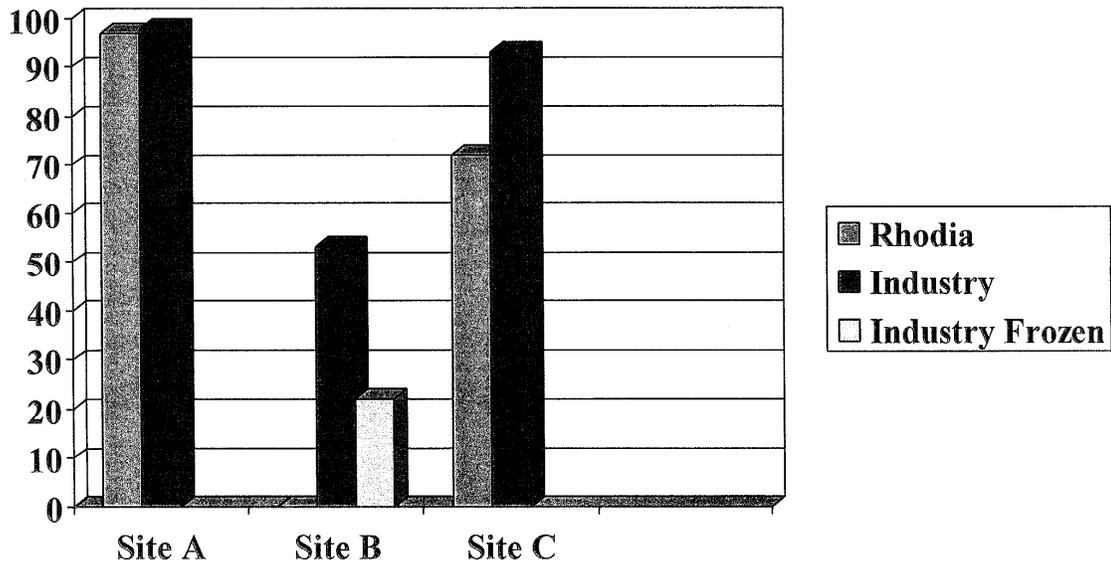
BR is site B refrigerated samples.

Percent of E. coli Positive 'B' Samples by Treatment



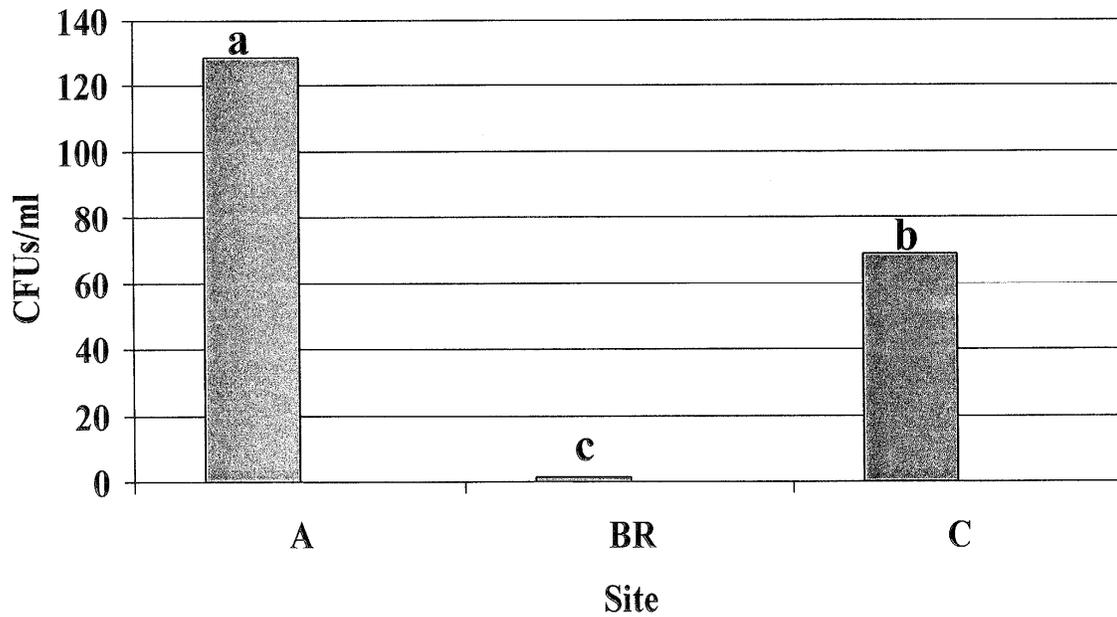
ab: Treatments with different letters are significantly different

Results of E. coli Incidence from Rhodia Petition vs. Poultry Industry Multiple Plant Study



Rhodia data from petition amendment to 9 CFR 381.91
to allow on-line reprocessing of Poultry Carcasses, (Aug. 30, 1998)

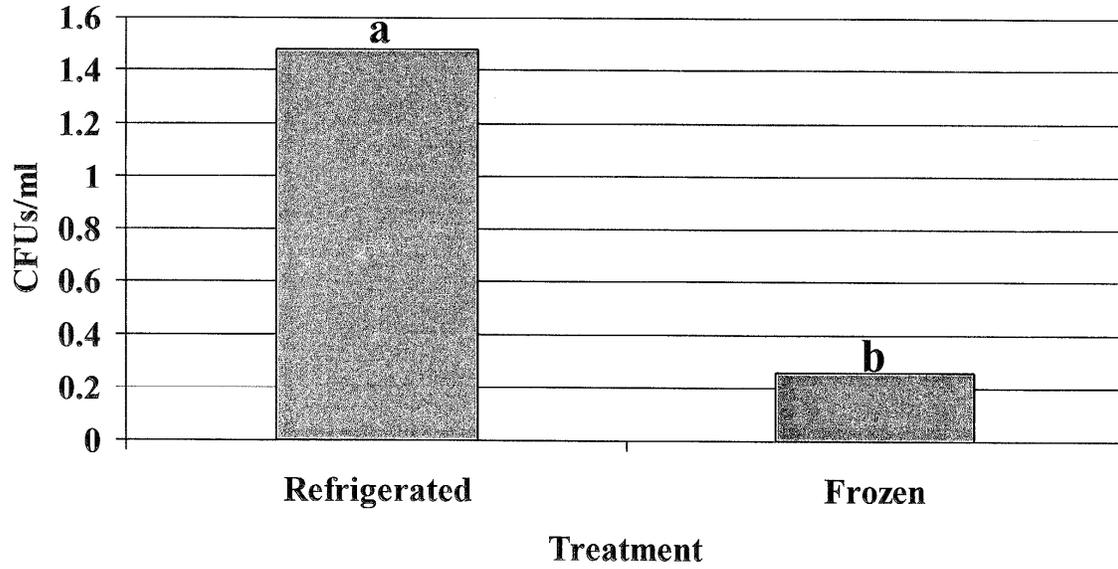
Mean E. coli Counts by Site and Treatment for Refrigerated Samples



abc: Means with different letters are significantly different

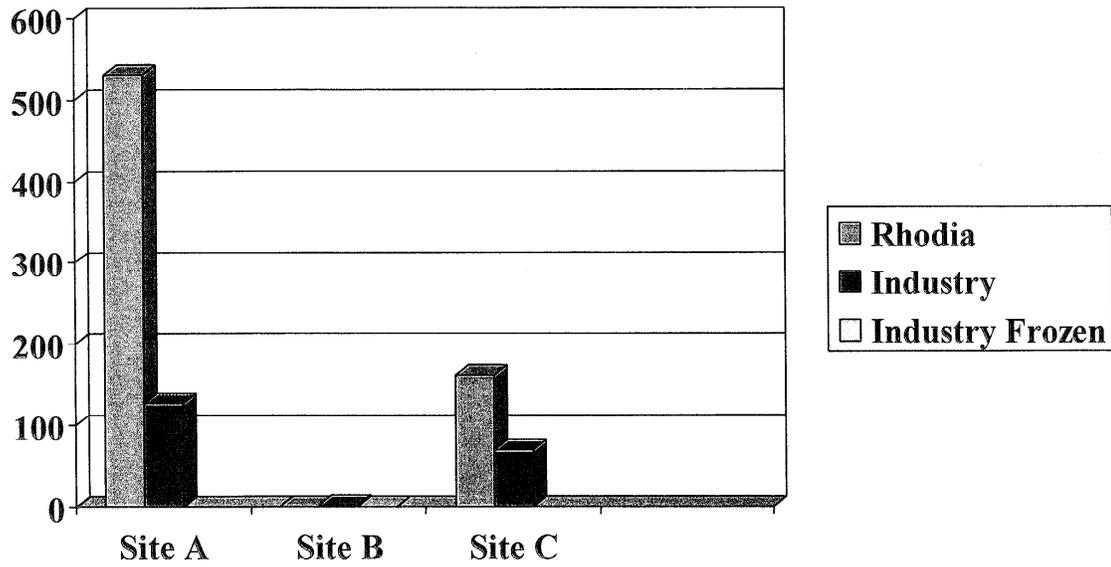
BR is site B refrigerated samples.

Mean E. coli Counts for 'B' Samples

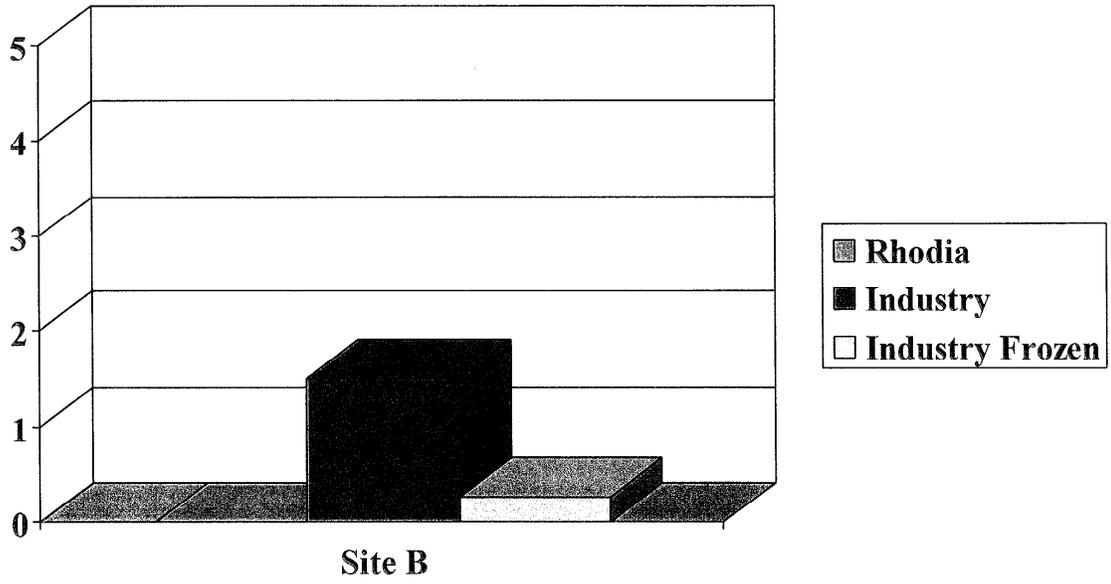


ab: means with different letters are significantly different

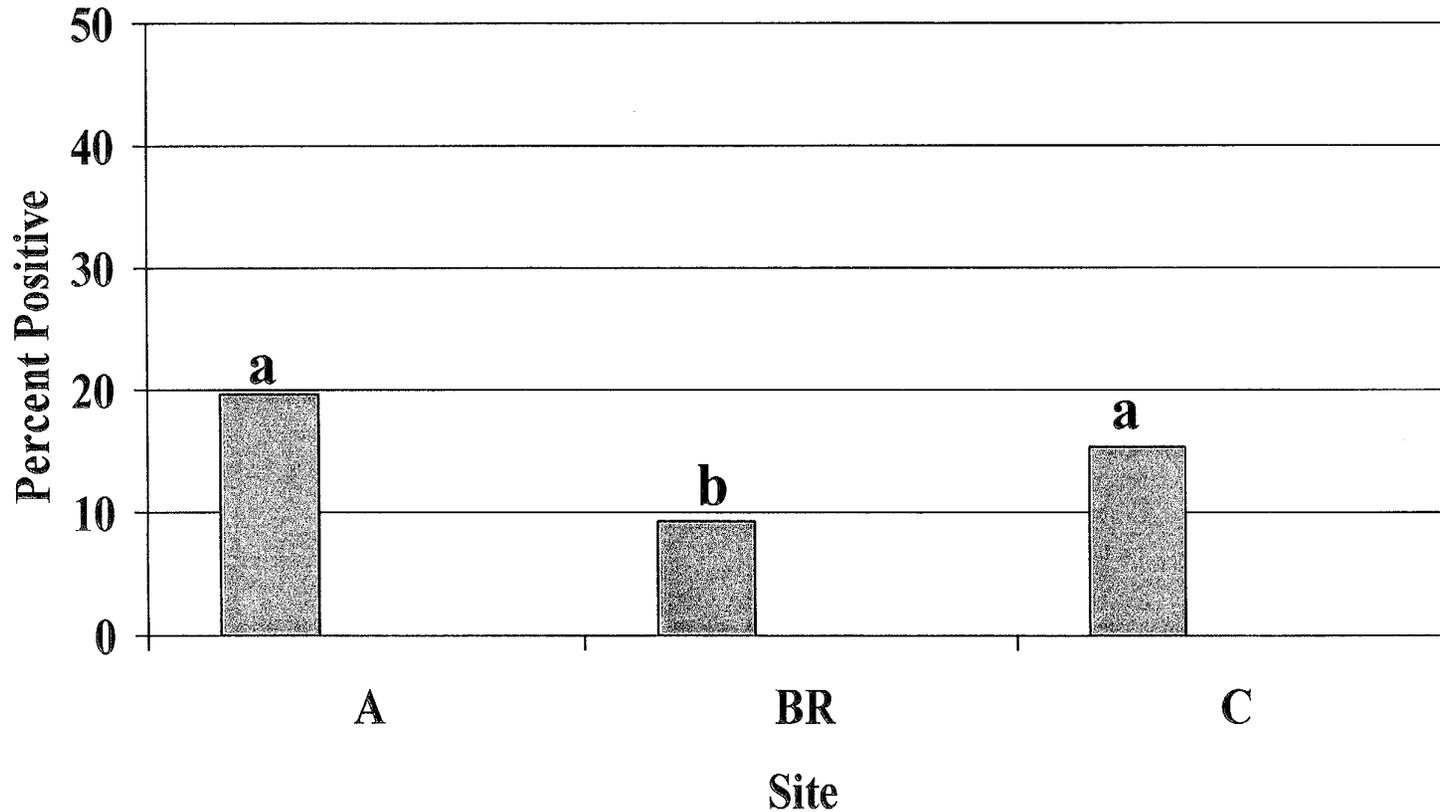
Results of E. coli Counts from Rhodia Petition vs. Poultry Industry Multiple Plant Study



Results of E. coli Counts for Site B



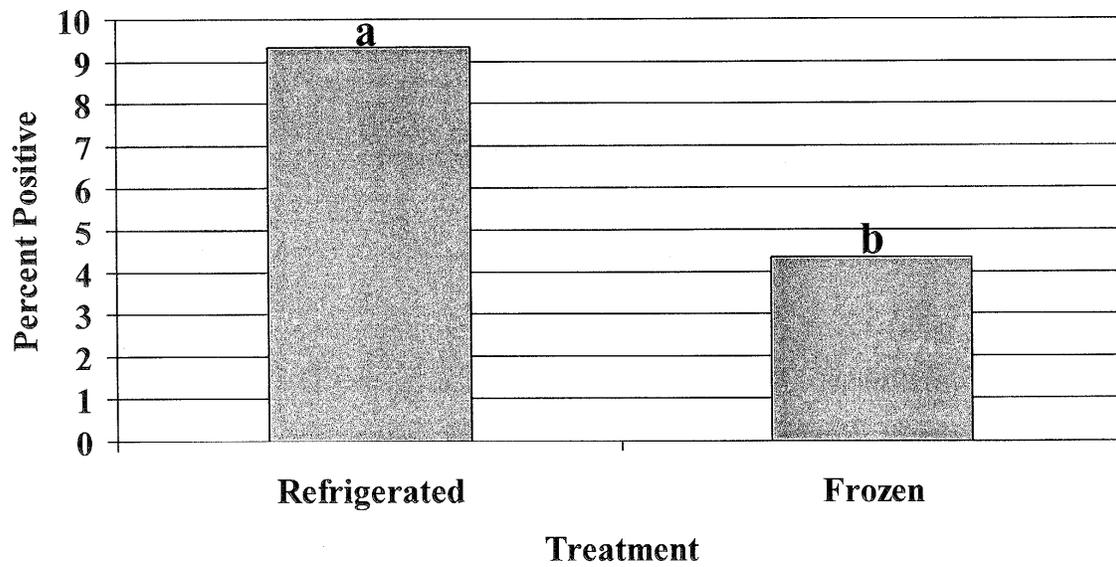
Percent of Salmonella spp. Positive By Site for Refrigerated Samples



abc: Sites with different letters are significantly different

BR is site B refrigerated samples.

Percent of Salmonella spp. Positive Post-TSP Samples from Reduced Data Set*



*Reduced Data set eliminated those plants that had only negative Salmonella responses

ab: Treatments with different letters are significantly different

Results of Salmonella spp. Incidence from Rhodia Petition vs. Poultry Industry Multiple Plant Study

