

Errata for:

Northern Saskatchewan Prenatal Biomonitoring
Study Technical Summary Report



Saskatchewan Ministry of Health and Alberta Health and Wellness

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Errata for

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Contents

Table of Contents

<i>Summary</i>	1
Metals and Micronutrients.....	1
Phthalate Metabolites	2
<i>Errata Table: Northern Saskatchewan Prenatal Monitoring Study Technical Summary Report</i>	2
<i>References</i>	6

Errata for:

Northern Saskatchewan Prenatal Biomonitoring Study Technical Report

Summary

The levels of some metals, micronutrients and phthalate metabolites described in this report may be inflated by contamination introduced from the type of blood collection tubes used. The serum pools analyzed for environmental chemicals in this study and the previous 2005 Alberta Biomonitoring Program study were created from blood serum specimens collected specifically for prenatal screening. Serum separator tubes (SSTs) were used for these collections which are standard for prenatal screening. SSTs are not recommended for trace metal analysis. Therefore, it is possible the results for some metals, metalloids, and micronutrients in this report may be artificially inflated or reduced by the use of these tubes and other sample collection and storage devices as background contamination by these elements was not assessed.

Listed below are the errata for the metals, metalloids, micronutrients, and phthalate metabolite data for the Northern Saskatchewan Prenatal Biomonitoring Study Technical Report. Similar errata have been developed for the Alberta Biomonitoring Program's data on pregnant women (2005) and children (2004-2006), which has been used as comparative data for the Saskatchewan report. Appendix A and B provide the rationale for these recommendations.

Metals and Micronutrients

Blood samples were collected in serum separator tubes (SSTs), which are not recommended for trace metals analysis. As a result of the use of these tubes it is possible the results for some metals and micronutrients in this report may be artificially inflated through metals or micronutrients leaching from the separator gel or reduced through adsorption onto or absorption into the gel. There is less evidence of the potential to the SSTs to reduce the concentration, but this is theoretically possible. The classifications below are detailed further in Appendix A.

The metals most likely to be affected by contamination include:

- Aluminum
- Antimony
- Barium
- Boron
- Manganese
- Nickel

Metals that are less likely, but **may possibly** be affected by background contamination include:

- Lead
- Cobalt
- Selenium
- Strontium
- Zinc

Metals for which it is **unknown** if SST collection may affect concentrations include:

- Cesium
- Cadmium
- Mercury
- Silver
- Copper
- Iron
- Magnesium
- Methyl mercury
- Molybdenum
- Uranium

Phthalate Metabolites

To investigate the potential for contamination by phthalate diesters, an experiment was conducted, substituting bovine serum for human serum, to evaluate background levels of phthalate metabolites in the SSTs used for collection and the cryovials used for storage of the serum samples. In the presence of phthalate diesters (parent phthalate compounds), some of which are ubiquitous in the environment, esterases in the serum can convert the diesters to the primary metabolites. This results in elevated levels of the primary metabolites. Therefore, there is a risk that serum levels of some of the primary metabolites may be falsely elevated if contamination of samples with the primary diesters occurred during or after collection.

The primary metabolite MiBP (monoisobutylphthalate) was detected in bovine serum stored in the collection tubes and containers at levels greater than the mean plus two standard deviations of the concentration detected in the blank bovine serum samples. The parent phthalate diester, DBP (di, is used in some medical devices and is ubiquitous in the environment, leading to a higher background contamination risk than some other phthalates. Therefore, the MiBP results in this report may be falsely elevated due to background contamination and should be interpreted with caution. Appendix B provides further details on the phthalate metabolite recommendations.

Errata Table: Northern Saskatchewan Prenatal Monitoring Study Technical Summary Report

Errata Table 1 below lists the specific errata for this report (Northern Saskatchewan Prenatal Biomonitoring Study: Technical Summary Report). Further details are available in The Errata for the Northern Saskatchewan Prenatal Biomonitoring Study: Technical Report:

- 1) Appendix A provides the rationale for the metals, metalloids, and micronutrients recommendations. 2)
- 2) Appendix B provides the rational for the phthalate metabolite recommendations.

ERRATA TABLE 1: CORRECTIONS BY PAGE NUMBER

Page	Paragraph, Table, Figure	Section	Correction
37	p.37: paragraph 1 & Figure 12	Methyl Mercury	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for methyl mercury analysis as it is unknown how the SSTs can contribute or reduce the serum methyl mercury concentration.
38-39	p.38: paragraph 5 & p.39: Table 3	Monoisobutyl phthalate (MIBP)	As the parent phthalate, DBP, is used in some medical devices and is ubiquitous in the environment, MIBP results may be falsely elevated and should be interpreted with caution.
42	p.42: paragraph 3 & Figure 13	Aluminum	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for aluminum analysis as contamination is highly likely.
43	p.43: paragraph 4	Antimony	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for antimony analysis as contamination is highly likely.
44	p.44: paragraph 6 & Figure 14	Arsenic	Concentrations were measured in serum collected in SSTs which are not recommended by clinical reference laboratories for arsenic and it is unknown how the SSTs may affect concentration.
45	p.45: paragraph 8	Barium	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for barium analysis as contamination is highly likely.
46	p.46: paragraph 8	Cadmium	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for cadmium and it is unknown how the SSTs may contribute to or reduce the serum cadmium concentration.
47-48	p.47: paragraph 6 & 7 & p.48: Figure 15	Cesium	Concentrations were measured in serum collected in SSTs and it is unknown how the SSTs may contribute to or reduce the serum cesium concentration.
49	p.49: paragraph 4 & 5	Chromium	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for chromium analysis as contamination is highly likely.
50-51	p.50: paragraph 7-8 & p.51 Figure 16	Lead	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for lead analysis as background contamination is possible.

Page	Paragraph, Table, Figure	Section	Correction
52	p.52: paragraph 3-4 & Figure 17	Mercury	Concentrations were measured in serum collected in SSTs which are not recommended by clinical reference laboratories for mercury as it is unknown how the SSTs may contribute to or reduce the serum mercury concentrations.
53	p.53: paragraph 7 &10	Strontium	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for strontium analysis as it is unknown how the SSTs may contribute to or reduce serum strontium concentration.
54	p.54: paragraph 8 & 9	Uranium	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for uranium analysis as it is unknown how the SSTs may contribute to or reduce the serum uranium concentration.
55	p.55: paragraph 6 & 7	Boron	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for boron analysis as environmental contamination is highly likely.
56-57	p.56: paragraph 4 & 5 & p.57: Figure 18	Cobalt	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for cobalt analysis as contamination is possible.
58	p.58: paragraph 1-2	Copper	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for copper analysis as it is unknown how the SSTs may contribute to or reduce the serum copper concentration.
58-59	p.58: paragraph 9 & p.59: paragraph 1	Iron	Concentrations were measured in serum collected in SSTs, and it is unknown how the SSTs may contribute to or reduce the serum iron concentration.
59	p.59: paragraph 6-7	Manganese	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for manganese analysis as environmental contamination is highly likely.
60	p.60: paragraph3-4	Magnesium	Concentrations were measured in serum collected in SSTs, and it is unknown how the SSTs may contribute to or reduce the serum magnesium concentration.
61	p.61: paragraph 1 & 2	Molybdenum	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for molybdenum analysis as it is unknown how the SSTs may contribute to or reduce the serum molybdenum concentration.
61	p.61: paragraph 4 & 5	Nickel	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for nickel analysis as contamination is highly likely.

Page	Paragraph, Table, Figure	Section	Correction
62	p.62: paragraph 8 & 9	Selenium	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for selenium analysis as contamination is highly likely.
64	p.64: paragraph 1 & 2	Zinc	Concentrations were measured in serum collected in SSTs, which are not recommended by clinical reference laboratories for zinc analysis as contamination is possible.

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