O.Reg. 455/09 Toxic Substance Reduction Plan Summary
Parmalat Canada Inc.

Substance & CAS No:		Total Phosphorus	NA-22
Substances at the Facility for which a Plan has been developed:		Nitric Acid, Sulphuric Acid, Total Ammonia, PM_{10}, $PM_{2.5}$	
Facility Identification and Site Address			
Company Name		Parmalat Canada Inc.	
Facility Name		Winchester Plant	
Facility Address		**Physical Address**	**Mailing Address (if different)**
		490 Gordon Street Winchester, ON K0C 2K0	P.O. Box 430
Spatial Coordinates of Facility		472192 n E, 4993373 m N	*Expressed as UTM within NAD*
Number of Employees		197	
NPRI ID Number		3840	
Ontario MOE ID Number		-	
Parent Company Information			
Parent Company Name		Parmalat Canada Inc.	
Parent Company Address		405 The West Mall	
Percent Ownership		100%	
Parent Company Contact		Tony Cugliari	
Primary North American Industrial Classification System Code (NAICS)			
		Code	**Description**
2-digit NAICS Code		31	Food Manufacturing
4-digit NAICS Code		3115	Dairy Product Manufacturing
6-digit NAICS Code		311515	Butter, cheese and dry condensed dairy product manufacturing
Company Contact Information			
Facility public contact	**Name**	Stephen Wilson	Same as Facility Address
	Title	Director, Plant Operations	
	Email	stephen_wilson@parmalat.ca	
	Telephone #	(613) 774-2310 x2150	
	Fax #	(613) 774-2685	
Toxic Substance Reduction Planner Information			
Planner Responsible for Making Recommendations	**Name**	Patsy Duever	Dillon Consulting Limited 51 Breithaupt Street Kitchener, ON N2H 5G5
	Company	Dillon Consulting Limited	
	License #	TSRP0119	
	Email	pduever@dillon.ca	
	Telephone #	519-571-9833 x3106	
	Fax #	519-571-7424	
Planner Responsible for Certification	**Name**	Patsy Duever	Dillon Consulting Limited 51 Breithaupt Street Kitchener, ON N2H 5G5
	Company	Dillon Consulting Limited	
	License #	TSRP0119	
	Email	pduever@dillon.ca	
	Telephone #	519-571-9833 x3106	
	Fax #	519-571-7424	

O.Reg. 455/09 Toxic Substance Reduction Plan Summary
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Plan Summary Statement
This plan summary accurately reflects the content of the toxic substance reduction plan for total phosphorus, prepared by Parmalat Canada Inc. Winchester Plant, dated November 28, 2013.
Statement of Intent
Parmalat Canada Inc. Winchester Plant does not intend to reduce the use of total phosphorus because it is a naturally occurring component of the milk that is processed at the facility.
Objective
While Parmalat has not identified any technically or economically feasible options for the reduction of phosphorus, the facility will continue on-going efforts to reduce the amount of phosphorus that enters the environment and to support efforts to mitigate the impacts of phosphorus in the South Nation Watershed.
Description of Substance and Use/Creation
For a description of how, when, where, and why total phosphorus is used, including quantifications for accounting and process flow diagrams see Attachment 1.
Options to be Implemented
As no options were identifed as technically and economically feasible, the facility does not intend to implement any options.
Certifications (s. 19)
Highest Ranking Employee
As of November 28, 2013, I, Stephen Wilson, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.
Total Phosphorus

HRE:	Stephen Wilson Director, Plant Operations *Digital Signature on File*	**Date:** November 29, 2013

Toxic Substance Reduction Planner
As of November 28, 2013, I, Patsy Duever, certify that I am familiar with the processes at Parmalat Canada Inc. Winchester plant that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv, and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated November 28, 2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.
Total Phosphorus

TSRP:	Patsy Duever	**Date:** November 28, 2013

Stages and Processes

Operations at the Parmalat Winchester facility have been divided into the following stages:

- Receiving;
- Material storage;
- Preparation;
- Production;
- Final storage, and
- Shipping.

Nitric acid was used as a formula component of cleaners used as part of the "clean-in-place" process at the site. Cleaning chemicals containing nitric acid were circulated through the production equipment as required to meet applicable food safety standards.

PM_{10} and $PM_{2.5}$ were created and released to air as part of combustion and production processes.

Sulphuric acid was used at the site for pH neutralization. Wastewater generated from production activities at the site (dairy production) was generally caustic (from the use of cleaning chemicals) and required stabilization prior to discharge to the environment. Sulphuric acid was added to the wastewater prior to entering the discharge lagoon (final treatment lagoon) and being released from the site. The pH of the wastewater was measured on the routine basis to ensure an adequate level of neutralization has occurred prior to discharge.

Total ammonia was contained in products added to dairy products to control the growth of cultures. In addition, total ammonia was created through the wastewater treatment process and was discharged as part of the wastewater effluent and sent off-site for disposal as part of biosolids.

Total phosphorus was a component of raw materials used and products produced at the facility and was discharged as part of the wastewater effluent and sent off-site for disposal as part of biosolids.

Detailed Process Flow Diagrams

Detailed process flow diagrams showing the amounts of nitric acid, PM_{10}, $PM_{2.5}$, sulphuric acid, total ammonia and total phosphorus at various stages of the production process can be found on Figures 1, 2, 3 and 4.

Air Releases

Nitric acid was assumed to be fully consumed through the cleaning process. Also, the release of nitric acid from bulk storage containers was deemed to be negligible. As a result, there were no air emissions of nitric acid.

Air releases of PM_{10} and $PM_{2.5}$ were estimated from combustion and production sources at the site, including natural gas combustion, water cooling towers and pollution control equipment associated with the dryers, silos and bagger stations. Air releases were calculated based on USEPA emission factors,

site-specific stack testing data and annual natural gas usage quantities, total powder production and equipment run-time provided by Parmalat.

Sulphuric acid was assumed to be fully neutralized as the pH of the discharge wastewater from the site was maintained above 6. Also, the release of sulphuric acid from bulk storage containers is deemed to be negligible. As a result, there were no air emissions of sulphuric acid.

Total ammonia and total phosphorus were either contained in products used at the site or wastewater discharges/biosolids disposed off-site. As a result, there were no air emissions or total ammonia and total phosphorus.

Off-Site Disposals

Nitric acid was assumed to be fully consumed through the cleaning process as the pH of the discharge wastewater from the site was maintained above 6. As a result, there were no off-site releases of nitric acid to the drain.

Sulphuric acid was assumed to be fully neutralized as the pH of the discharge wastewater from the site was maintained above 6. As a result, there were no off-site releases of sulphuric acid to the drain.

Total ammonia and total phosphorus are components of biosolids that were land-applied off-site. Disposal quantities were calculated based on the annual disposal quantities and laboratory data provided by Parmalat. In addition, total ammonia and total phosphorus are components of the wastewater treatment plant effluent that is discharged off-site. Wastewater releases were calculated using annual discharge volumes and laboratory data provided by Parmalat.

Use

The quantities of nitric acid, sulphuric acid and total ammonia used at the site were calculated based on the annual product usage quantities provided by Parmalat and the composition of nitric acid, sulphuric acid and total ammonia outlined in the product material safety data sheet (MSDS). Since raw material/final product composition data is not available, usage quantities were calculated based on the sum of total phosphorus releases from the wastewater treatment process (wastewater discharge and biosolids disposal).

Created

PM_{10} and $PM_{2.5}$ were created from combustion and productions sources at the site. For uncontrolled sources, it was assumed that air emission quantities equalled creation quantities. For controlled sources, the creation quantities were calculated based on the inlet loading to the pollution control equipment and estimated equipment removal efficiencies (based on USEPA guidance).

Total ammonia was created as part of the wastewater treatment process. Creation quantities were calculated based on the sum of total ammonia releases from the wastewater treatment process (wastewater discharge and biosolids disposal).
Nitric acid, sulphuric acid and total phosphorus were not created as part of the production process.

Transformed

Nitric acid, sulphuric acid, total ammonia and total phosphorus were not transformed as part of the production process.

Destroyed

Nitric acid was assumed to be fully (100%) destroyed through the cleaning process as it converts to nitrate ion.

Sulphuric acid was assumed to be fully (100%) destroyed (neutralized) as the pH of the discharge wastewater from the site was maintained above 6.

Total ammonia and total phosphorus were not destroyed as part of the production process.

Contained in Product

Based on information provided by Parmalat, nitric acid, sulphuric acid, total ammonia and total phosphorus were not contained in any products produced at the site.

TRA Summary

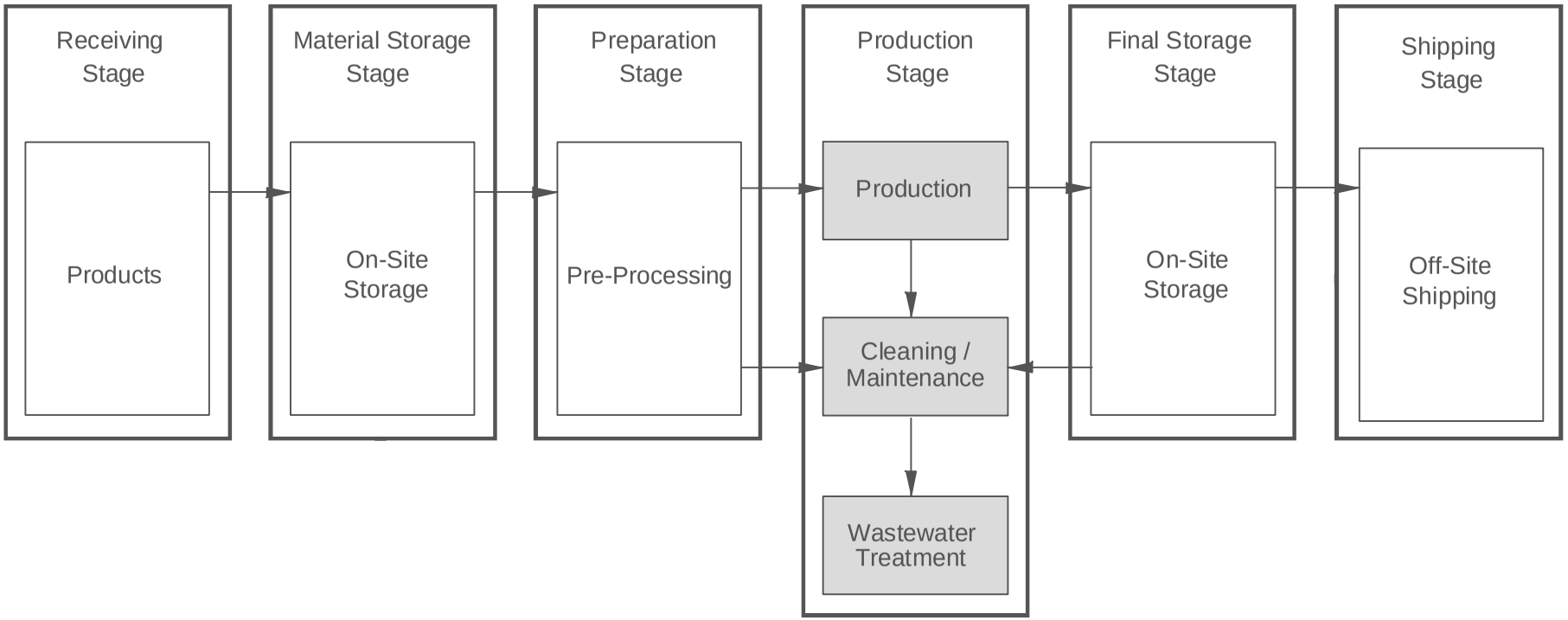
A summary of the TRA accounting quantities and input/output analysis is presented in the attached tables.

Data Quality

Methodologies used to complete the TRA calculations at the site were based on:

- Engineering calculations/judgment – derived from fundamental scientific and engineering principles.
- Source testing.
- USEPA emission factors.

As a result, based on Ministry guidance, the data quality can be considered to be “above-average”.



Note: The Toxic Substance is not associated with the product that leaves the facility.

Toxic Subtance associated with process.

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August 2013

Project No. 13-7387

Scale: n/a

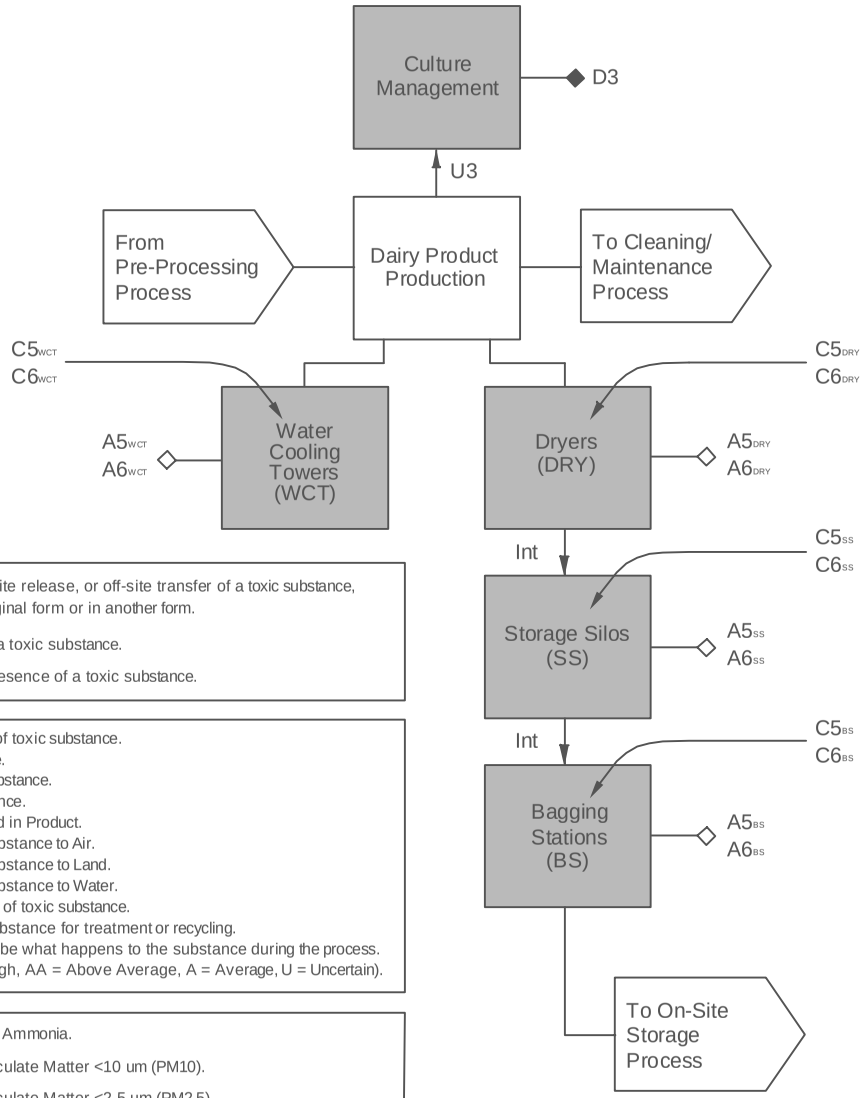
Parmalat Canada - Parmalat Winchester

Toxics Reduction Act Accounting

2012 Reporting Year

FIGURE 1

Dairy Production



On-site or off-site release, or off-site transfer of a toxic substance, either in its original form or in another form.

Destruction of a toxic substance.

Denotes the presence of a toxic substance.

U	Enters the process (Use) of toxic substance.
C	Creation of toxic substance.
T	Transformation of toxic substance.
D	Destruction of toxic substance.
P	Toxic substance Contained in Product.
A	On-site release of toxic substance to Air.
L	On-site release of toxic substance to Land.
W	On-site release of toxic substance to Water.
DIS	On-site or off-site disposal of toxic substance.
TR	Off-site transfer of toxic substance for treatment or recycling.
Int	Intermediate step to describe what happens to the substance during the process.
DQL	Data Level Quality (H = High, AA = Above Average, A = Average, U = Uncertain).

"3"	Refers to Total Ammonia.
"5"	Refers to Particulate Matter <10 um (PM10).
"6"	Refers to Particulate Matter <2.5 um (PM2.5).

Toxic Subtance associated with process.

Accounting Category	Quantity (tonne)	Data Quality	Estimation Method
U3	>1 to 10	Above Average	Engineering Calculations
D3	>1 to 10	Marginal	Engineering Calculations

Accounting Category	Quantity (tonne)	Data Quality	Estimation Method
$C5_{WCT}$	<1	Average	Engineering Calculations
$C5_{DRY}$	> 10 to 100	Average	Engineering Calculations
$C5_{SS}$	>1 to 10	Average	Engineering Calculations
$C5_{BS}$	>1 to 10	Average	Engineering Calculations
$A5_{WCT}$	<1	Above Average	Engineering Calculations
$A5_{DRY}$	>1 to 10	Above Average	Engineering Calculations
$A5_{SS}$	<1	Above Average	Engineering Calculations
$A5_{BS}$	<1	Above Average	Engineering Calculations

Accounting Category	Quantity (tonne)	Data Quality	Estimation Method
$C6_{WCT}$	<1	Average	Engineering Calculations
$C6_{DRY}$	> 10 to 100	Average	Engineering Calculations
$C6_{SS}$	>1 to 10	Average	Engineering Calculations
$C6_{BS}$	>1 to 10	Average	Engineering Calculations
$A6_{WCT}$	<1	Above Average	Engineering Calculations
$A6_{DRY}$	>1 to 10	Above Average	Engineering Calculations
$A6_{SS}$	<1	Above Average	Engineering Calculations
$A6_{BS}$	<1	Above Average	Engineering Calculations

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Toxics Reduction Act Accounting
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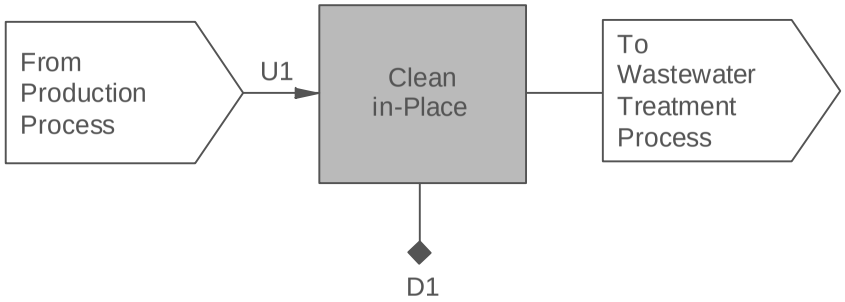
FIGURE 2
Production



Accounting Category	Quantity (tonne)	Data Quality	Estimation Method
U1	> 100 to 1000	Above Average	Engineering Calculations
D1	> 100 to 1000	Above Average	Engineering Calculations

◇—	On-site or off-site release, or off-site transfer of a toxic substance, either in its original form or in another form.
◆—	Destruction of a toxic substance.
—→	Denotes the presence of a toxic substance.

U	Enters the process (Use) of toxic substance.
C	Creation of toxic substance.
T	Transformation of toxic substance.
D	Destruction of toxic substance.
P	Toxic substance Contained in Product.
A	On-site release of toxic substance to Air.
L	On-site release of toxic substance to Land.
W	On-site release of toxic substance to Water.
DIS	On-site or off-site disposal of toxic substance.
TR	Off-site transfer of toxic substance for treatment or recycling.
Int	Intermediate step to describe what happens to the substance during the process.
DQL	Data Level Quality (H = High, AA = Above Average, A = Average, U = Uncertain).

"1"	Refers to Nitric Acid.

Toxic Subtance associated with process.

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Toxics Reduction Act Accounting
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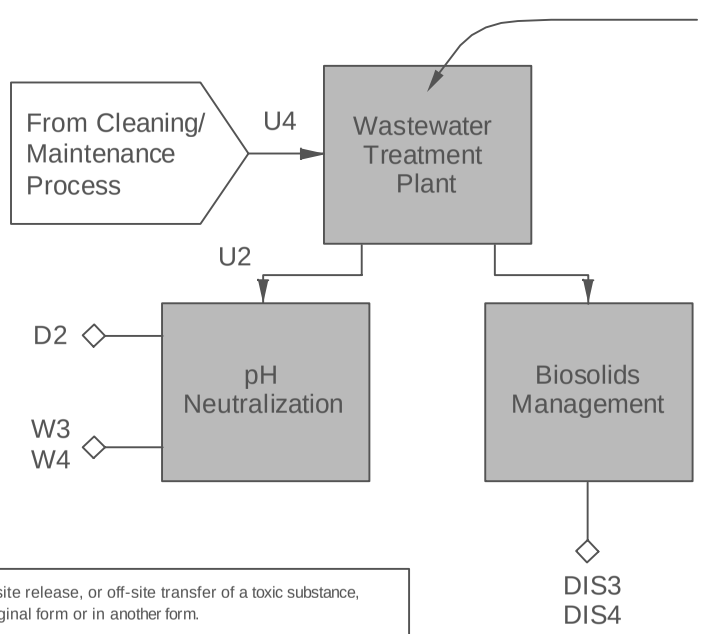
FIGURE 3
Cleaning/Maintenance



Accounting Category	Quantity (tonne)	Data Quality	Estimation Method
U2	> 100 to 1000	Above Average	Engineering Calculations
D2	> 100 to 1000	Above Average	Engineering Calculations

Accounting Category	Quantity (tonne)	Data Quality	Estimation Method
C3	> 10 to 100	Above Average	Engineering Calculations
W3	< 1	Above Average	Engineering Calculations
DIS3	> 10 to 100	Above Average	Engineering Calculations

Accounting Category	Quantity (tonne)	Data Quality	Estimation Method
U4	> 10 to 100	Marginal	Engineering Calculations
W4	< 1	Above Average	Engineering Calculations
DIS4	> 10 to 100	Above Average	Engineering Calculations

On-site or off-site release, or off-site transfer of a toxic substance, either in its original form or in another form.

Destruction of a toxic substance.

Denotes the presence of a toxic substance.

U	Enters the process (Use) of toxic substance.
C	Creation of toxic substance.
T	Transformation of toxic substance.
D	Destruction of toxic substance.
P	Toxic substance Contained in Product.
A	On-site release of toxic substance to Air.
L	On-site release of toxic substance to Land.
W	On-site release of toxic substance to Water.
DIS	On-site or off-site disposal of toxic substance.
TR	Off-site transfer of toxic substance for treatment or recycling.
Int	Intermediate step to describe what happens to the substance during the process.
DQL	Data Level Quality (H = High, AA = Above Average, A = Average, U = Uncertain).

"2"	Refers to Sulphuric Acid.
"3"	Refers to Total Ammonia.
"4"	Refers to Total Phosphorus.

Toxic Subtance associated with process.

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Project No. 13-7387

Scale: n/a

Parmalat Canada - Parmalat Winchester

Toxics Reduction Act Accounting

2012 Reporting Year

FIGURE 4

Wastewater Treatment

2012 Toxics Reduction Act - Accounting

Release Estimates - Parmalat Winchester

Mass Balance	**Nitric Acid**

Enters the Process (Use) + Created = Transformed + Destroyed and Leaves Process

Leaves Process =	Contained in product	
	Released to air	
	Released to water	
	Released to land	
	Disposed of	
	Transferred off-site for treatment or recycling	
Use =	>100 to 1,000	tonne
Created =	0	tonne
Transformed =	0	tonne
Destroyed =	>100 to 1,000	tonne
Contained in product =	0	tonne
Released to air =	0	tonne
Released to water =	0	tonne
Released to land =	0	tonne
Disposed of =	0	tonne
Transferred =	0	tonne
Mass Balance =	0	tonne

Rationale for Balance

- All sulphuric acid used was assumed to be fully neutralized.
- Release estimates for acids are dependent on whether the acid is neutralized to a pH of 6.0 or greater.
- The average pH of wastewater discharged from the Parmalat Winchester facility was greater than 6.0.
- Once an acid is neutralized, its concentration is zero percent, and therefore the estimates release is zero.

2012 Toxics Reduction Act - Accounting

Release Estimates - Parmalat Winchester

Mass Balance | **Sulphuric Acid**

Enters the Process (Use) + Created = Transformed + Destroyed and Leaves Process

Leaves Process =	Contained in product	
	Released to air	
	Released to water	
	Released to land	
	Disposed of	
	Transferred off-site for treatment or recycling	
Use =	> 100 to 1,000	tonne
Created =	0	tonne
Transformed =	0	tonne
Destroyed =	> 100 to 1,000	tonne
Contained in product =	0	tonne
Released to air =	0	tonne
Released to water =	0	tonne
Released to land =	0	tonne
Disposed of =	0	tonne
Transferred =	0	tonne
Mass Balance =	0	tonne

Rationale for Balance

- All sulphuric acid used was assumed to be fully neutralized.
- Release estimates for acids are dependent on whether the acid is neutralized to a pH of 6.0 or greater.
- The average pH of wastewater discharged from the Parmalat Winchester facility was greater than 6.0.
- Once an acid is neutralized, its concentration is zero percent, and therefore the estimates release is zero.

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Release Estimates - Parmalat Winchester

Mass Balance	PM2.5

Enters the Process (Use) + Created = Transformed + Destroyed and Leaves Process

Leaves Process =	Contained in product
	Released to air
	Released to water
	Released to land
	Disposed of
	Transferred off-site for treatment or recycling

Use =	0	tonne
Created =	>1 to 10	tonne
Transformed =	0	tonne
Destroyed =	0	tonne
Contained in product =	0	tonne
Released to air =	> 1 to 10	tonne
Released to water =	0	tonne
Released to land =	0	tonne
Disposed of =	0	tonne
Transferred =	0	tonne

Mass Balance =	0	tonne

Rationale for Balance

- PM2.5 is created from the combustion of natural gas, operation of cooling towers, and from the production of powder.

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Release Estimates - Parmalat Winchester

Mass Balance	PM10

Enters the Process (Use) + Created = Transformed + Destroyed and Leaves Process

Leaves Process =	Contained in product
	Released to air
	Released to water
	Released to land
	Disposed of
	Transferred off-site for treatment or recycling

Use =	0	tonne
Created =	> 10 to 100	tonne
Transformed =	0	tonne
Destroyed =	0	tonne
Contained in product =	0	tonne
Released to air =	> 1 to 10	tonne
Released to water =	0	tonne
Released to land =	0	tonne
Disposed of =	0	tonne
Transferred =	0	tonne

Mass Balance =	0	tonne

Rationale for Balance

- PM10 is created from the combustion of natural gas, operation of cooling towers, and from the production of powder.

2012 Toxics Reduction Act - Accounting

Release Estimates - Parmalat Winchester

Mass Balance | **Total Ammonia**

Enters the Process (Use) + Created = Transformed + Destroyed and Leaves Process

Leaves Process =
- Contained in product
- Released to air
- Released to water
- Released to land
- Disposed of
- Transferred off-site for treatment or recycling

Use =	> 1 to 10	tonne
Created =	> 10 to 100	tonne
Transformed =	0	tonne
Destroyed =	> 1 to 10	tonne
Contained in product =	0	tonne
Released to air =	0	tonne
Released to water =	> 0.1 to 1	tonne
Released to land =	0.0	tonne
Disposed of =	> 10 to 100	tonne
Transferred =	0	tonne

Mass Balance = 0 tonne

Rationale for Balance

- Total ammonia is created from biosolids that are generated from wastewater treatment operations.
- Total ammonia is released to water as part of the effluent discharged from the WWTP.
- Total ammonia is disposed off-site as part of the biosolids application program.

2012 Toxics Reduction Act - Accounting

Release Estimates - Parmalat Winchester

Mass Balance | **Total Phosphorus**

Enters the Process (Use) + Created = Transformed + Destroyed and Leaves Process

Leaves Process =
- Contained in product
- Released to air
- Released to water
- Released to land
- Disposed of
- Transferred off-site for treatment or recycling

Use =	0	tonne
Created =	> 10 to 100	tonne
Transformed =	0	tonne
Destroyed =	0	tonne
Contained in product =	0	tonne
Released to air =	0	tonne
Released to water =	> 0.1 to 1	tonne
Released to land =	0	tonne
Disposed of =	> 10 to 100	tonne
Transferred =	0	tonne

Mass Balance =	0	tonne

Rationale for Balance

- Total phosphorus is created from biosolids that are generated from wastewater treatment operations.
- Total phosphorus is released to water as part of the effluent discharged from the WWTP.
- Total phosphorus is disposed off-site as part of the biosolids application program.