HACCP PLAN

Hazard Analysis and Critical Control Points

Sodium Acid Pyro Phosphate Process (SAPP)

CHICAGO HEIGHTS PLANT
1101 Arnold St, Chicago Hts, IL 60430-2995
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TABLE OF CONTENTS

PLANT INFORMATION / HISTORY

COMPANY NAME	Innophos Inc.
ADDRESS	1101 Arnold Street, Chicago Heights, Illinois, 60411-2904
PHONE	Phone: 708-757-6111 Fax: 708-709-2861
PLANT MANAGER	Steve Leontaras
PRINCIPLE BUSINESS	Innophos is a leading producer of specialty grade phosphate products for the Food, Pharmaceutical and Industrial market segments.
INNOPHOS FOOD SAFETY POLICY STATEMENT	Innophos, Inc. is committed to providing high quality and safe products to our customers. These products are manufactured in compliance with all relevant legislation and codes of practice to ensure that they can be suitable for use as food and pharmaceutical ingredients. Specifically: • Our food products are produced under current Good Manufacturing Practices (GMP's) for the manufacturing, processing, packing and holding of human food. Periodic audits are conducted to monitor compliance. • All of our processes are covered under Hazard Analysis Critical Control Points (HACCP) Plans, which are designed to identify and reduce or eliminate risks associated with our products. • All manufacturing employees receive orientation and annual retraining in our Quality Systems, Good Manufacturing Practices and HACCP, programs and procedures. • Security at our physical facilities is continuously monitored to ensure that the quality and safety of our food and pharmaceutical ingredients are not compromised. Audits and Management Review Meetings are conducted at all locations to review the various metrics relating to food safety in order to ensure compliance, assess potential shortfalls in performance, and develop action plans for improvement.
ADDITIONAL INFORMATION / HISTORY	The Chicago Heights Plant is located in Chicago Heights, Illinois, on 60 acres of land between State Street and Arnold Street. The plant manufactures basic and specialty chemicals produced in 12 different, segregated continuous chemical processes. It employs approximately 170 people in operational, clerical, professional and management functions. The Union representation is International Union of United Steel Workers AFL-CIO-CLC Local Union No. 7-765.

The Chicago Heights Plant has had a long history at this location. Some of the notable milestones are:

1900 – August Koch obtains patent for Monocalcium Phosphate and Dicalcium Phosphate. Phosphate production begins.
1902 – Victor Chemical Works is incorporated and located on the present site with 25 employees. The Chicago Heights Plant becomes the flagship facility for Victor Chemical Works.
1930 – First production of Trisodium Phosphate, Sodium Acid Pyrophosphate, Tetra Sodium Phosphate and Disodium Phosphate.
1959 – Victor Chemical becomes a division of Stauffer Chemical.
1960 – Waterway Plant starts up as a subsidiary of the Chicago Heights Plant.
1979 – Expansion of CD (Dicalcium phosphate) process.
1979 – Sodium Bicarbonate process start-up.
1980 – New Tricalcium Phosphate Plant start-up.
1987 – The Chicago Heights Plant becomes part of Rhône-Poulenc.
1995 – Silica Plant start-up.
1998 – The Chicago Heights Plant becomes part of Rhodia Inc.
1999 – ISO 9002 Registration of the Quality System with NSF.
2001 – Ammonium Phosphate process is shut down.
2003 – The warehousing and shipping of packaged phosphates is outsourced.
2003 – Upgrade of the Quality System to conform to ISO 9001:2000.
2004 – The Chicago Heights Plant becomes Innophos Inc.
2010 – Upgrade of the Quality System to conform to ISO 9001:2008
2011 - Achieved BRC Global Standard for Food Safety Certification

ORGANIZATION:

Plant Manager:	Steve Leontaras
Operations Manager:	Donald Yowell
Quality, Safety and Health Manager:	Laurian Popovici
Maintenance Manager:	Howard Pocius
QA Lab Manager:	John Tucker
HR / Labor Relations Manager:	John Hynes
Environmental Engineering Manager:	Sean Schnepper
Director of Engineering:	Don Strohacker

HACCP TEAM

MEMBERS

Quality, Safety and Health Manager HACCP Coordinator:	Laurian Popovici
Production Engineer:	Jessica Harms
Production Engineer:	Robert Downes
Production Engineer:	Charlotte Okwudi
Quality Unit Engineer:	Lawrence Benson
Quality Assurance Lab Chemist:	Caroline Froning

REVIEW OF PREREQUISITE PROGRAMS

INTRODUCTION	Innophos has established, implemented and maintains environmental and operational Prerequisite Programs necessary to create an environment suitable to produce safe and legal food products. The following programs are the foundation for a successful HACCP Program. The general procedures associated with the required programs are documented and reviewed for improvement through the plant's self-inspection, internal audit program and training program. Other programs are implemented and documented but are not included in this section: Supplier Approval Program (CH-QAP-06), Raw Material Specifications, Process Control (CH-QAP-09), Laboratory Equipment Calibration (CH-QAP-11), Finished Product Specifications (CH-LAB-0000), and Packaging / Labeling Requirements (CH-A01-5009, CH-A03-0010).

CLEANING AND SANITATION PROGRAM	The scope of the Cleaning and Sanitation Program is to minimize food safety risks by eliminating possible contamination - inherent to the equipment - to the product.
	
	Program Components
	
	Cleaning schedules, procedures, and verification activities are in place for both processing equipment and building structures. The program is designed to maintain the sanitary condition of food contact surfaces and the facility environment. It is also designed to ensure that sanitation practices do not pose a risk to the product.
	
	Operators verify visually, each time, that the equipment is clean and can be used as intended, and document the verification.
	
	Water is the only cleaning agent used in cleaning process equipment.
	
	When cleaning deficiencies are noted in the program, the procedures are reviewed for modification and the personnel responsible retrained.
	
	Corrective actions for cleaning are documented from informal operational inspections. Routine inspections and the internal audit program verify the effective implementation and maintenance of this system.
	
	• Building Sanitation Procedure:
	  o *Production Area Cleaning (CH-GMP-1030)*
	• Equipment Sanitation Procedure:
	  o *Area 1 Equipment Sanitation Procedure (CH-A01-1003)*
	• Building Sanitation Schedule:
	  o *SAPP Building Cleaning Schedule and Record (CH-SAP-5010)*
	• Equipment Sanitation Schedule:
	  o *Area 1 Equipment Sanitation Schedule and Report (CH-A01-5007)*
	• Building Sanitation Documentation:
	  o *SAPP Housekeeping Sheet (CH-SAP-5007)*
	  o *SAPP Building Cleaning Schedule and Record (CH-SAP-5010)*
	• Equipment Sanitation Documentation:
	  o *Area 1 Equipment Sanitation Schedule and Report (CH-A01-5007)*

	o *Area 1 Equipment Sanitation Form (CH-A01-5006)* **Sanitation Program Verification** • Daily Management Observations (Daily Instructions) • Good Manufacturing Practices Inspection Checklist (CH-GMP-5053) • Internal Audits • Customer Audits **Sanitation Program Validation** • Industry Best Practice guidelines received from Customers • Sanitizing wipes Risk Assessment (Document CH-GMP-1017) • 3rd Party and Customer Audits
PEST CONTROL MANAGEMENT PROGRAM	From the *Pest Control Procedure, CH-GMP-1010*, the goal of the pest management program is to: • Eliminate pest activity throughout the facility. • Eliminate Food Safety risks due to pest activity • Maintain certification with the BRC Global Standard for Food Safety. • Provide thorough insight to the actual pest status of the plant at all times. **Program Components** • Program Procedures: o Per *Pest Control Procedure, (CH-GMP-1010)* • Assigned Responsibility: o Per *Pest Control Procedure, (CH-GMP-1010)* • Licensed Persons: o Per *Contractor Information SOP, (CH-PUR-1007)* • Insurance / Contract: o Per *Contractor Information SOP, (CH-PUR-1007)* • Monitoring Devices: o Per *Pest Control Procedure, (CH-GMP-1010)* o Documented in *Contractor's Program Manual* • Device Map: o Per *Pest Control Procedure, (CH-GMP-1010)* o Documented in *Contractor's Program Manual* • Inspection Reports: o Per *Pest Control Procedure, (CH-GMP-1010)* o Documented in *Contractor's Program Manual* • Follow-up to Findings: o Per *Pest Control Procedure, (CH-GMP-1010)* o Documented in *Contractor's Program Manual* • Pesticides: o Per *Pest Control Procedure, (CH-GMP-1010)* o Documented in *Contractor's Program Manual* • Education and Training: o Per *Pest Control Procedure, (CH-GMP-1010)* o Documented in *Contractor's Program Manual* **Program Verification** o Weekly monitoring inspections. **Program Validation** o Contractor Risk Assessment and Program Evaluation o Quarterly trend analysis.

	o Yearly audit by Contractor's independent auditor. o Industry Best Practice guidelines received from Customers and GMP Seminars
EQUIPMENT AND BUILDING MAINTENANCE PROGRAM	The goal of the Plant Maintenance Program is to maintain the process environment to optimize production and minimize food safety risks and equipment failures. **Program Components** • Maintenance for Food Safety: o Per *Food Safety Manual, (CH-GMP-0001)* o Per *Good Manufacturing Practices SOP, (CH-GMP-1000)* • Preventive Maintenance o Per *Maintenance Work Order Procedures SOP, (CH-MTC-101)* o Documented in *JDEdwards Enterprise1 Work Order Archive* • Unscheduled Maintenance o Per *Maintenance Work Order Procedures SOP, (CH-MTC-101)* o Documented in *JDEdwards Enterprise1 Work Order Archive* • Maintenance Procedures o Over 60 Maintenance SOP's Located in EtQ Document Control Module o Documents Controlled per: *Maintenance Document and Data Control Procedure, (CH-MTC-103)* • Training o Details in Staff Training Program below. o Per *Maintenance Training SOP (CH-MTC-102)* o Training records stored in EtQ databse **Maintenance Program Verification** o Work Orders activity – Closed work orders **Maintenance Program Validation** o Weekly Production / Maintenance Meetings o Monthly management review of OEE data. o Management Review Meeting – Review of Plant downtime and OEE trends o Industry Best Practices for Maintenance Programs based on Root Cause determination.
PERSONAL HYGIENE REQUIREMENTS	The scope of the Personal Hygiene Requirements Program is to minimize food safety risks by eliminating possible contamination transmitted from employees to the product. **Program Components** • Washing hands prior to starting work (Procedure CH-GMP-1000) o at start of shift, after breaks, after smoking, after being in the restroom, after performing any task outside of normal routine, which compromise the cleanliness of their hands • Process equipment is closed, there is no contact between employees and the product • Employees wear gloves during packaging (Procedure CH-GMP-1000) • All plant employees are trained during the GMP Training sessions.

Program Verification

- Completion of GMP Training

Program Validation

- Management Review Meeting – Review of customer complaints causes and evaluating whether personal hygiene could have been a factor or a root cause
- 3rd Party Audits
- Handwashing Risk Assessment completed by the Quality Unit Engineer (Document CH-GMP-1012)
- Protective Clothing Risk Assessment completed by the Quality Unit Engineer (Document CH-GMP-1016)

STAFF TRAINING PROGRAM

The goal of this program is to provide staff with the skills and knowledge necessary to produce safe and legal products, at the highest quality, and to customer requirements.

Program Components

- Overall Training Procedure:
  - Defined in *Resource Requirements (CH-QAP-18)*
- Annual Training Schedule – includes Food Safety / BRC / GMP Training
- Training Requirements by Position
  - Per various documented training matrixes
- Competency Evaluation
  - Defined in *Resource Requirements (CH-QAP-18)*
- Training Documentation and Archives
  - Documented by *Attendance Sign-Off Sheet (CH-QSD-5801),* Self Certification in EtQ database, or Web based training database.
  - Training records kept in EtQ database
- Computer Based Training – HACCP Overview

Staff Training Program Verification

- Supervisory Contact
- Training Records for each training session (CH-QSD-5801)
- Computer Based Training completion records and competency evaluation records
- Internal Audits - per Internal Audits Procedure (CH-QAP-17), documented on Employee Training Verification Sheet, (CH-QSD-5015)

Staff Training Program Validation

- Management Review Meeting – Review of Training Program and its effectiveness.
- Yearly Performance Reviews for salaried staff.
- Customer and 3rd Party Audits
- Best Practices in Industry, for employee training.

PURCHASING

The objective of this program is to purchase goods and services necessary to produce safe and legal products, at the highest quality and to meet customer requirements.

Program Components

- Supplier Evaluation, as described in *Purchasing Procedure (CH-QAP-06)* applied to (a) Raw Materials, (b) Packaging Supplies and (c) Plant equipment and supplies
- Purchasing Procedures, as described in *Purchasing Procedure (CH-QAP-06)*
- Verification of Purchased Product, as described in *Purchasing Procedure (CH-QAP-06)*
- Supplier Re-Evaluation, as described in *Purchasing Procedure (CH-QAP-06)*
- Program Documentation: Requisitions and Purchase Orders, and Approved Supplier List are located in JDEdwards' Enterprise1 database.

Program Verification

- Purchase Requisitions are issued by employees
- Purchase Orders are issued by Purchasing and sent to customers
- Internal audits

Program Validation

- Corporate Audits
- Yearly 3rd party audits including BDO Seidman, LLP, audits.
- JDEdwards Enterprise1 Validation (in progress).

TRANSPORTATION

The goal of the Transportation Program is to store and transport product to our customers while maintaining food safety, quality, and customer satisfaction.

Chicago Heights products are shipped from our Distribution Center which is managed by Jacobson Companies. Jacobson Co. has their own procedures but adhere to Innophos Warehouse Standards.

Jacobson Transportation Program

- Electronic Systems to segregate the product
- System to verify each order
- Cycle count program
- Truck inspection program – each truck is inspected and the ten-point inspection is documented
- Each shipment is triple-checked for accuracy - by different employees and by management
- Electronic system check to prevent shipping the wrong product to the wrong customer
- Truck sealing program – each truck sealed by the Jacobson employees and the seal numbers are documented

Program Verification

- Documentation for each element of the program
- Internal audits / inspections by Jacobson Management

Program Validation

- Jacobson Corporate Audits
- Innophos Corporate Audits by Quality Assurance Manager (documented)

	• Third party audits by customers
PROCESSES TO PREVENT CROSS-CONTAMINATION	The objective of this program is to minimize food safety risks by eliminating possible cross-contamination between products or environment. **Program Components** • The process equipment is closed. Where the equipment needs to be opened, measures are taken to minimize the risk of contamination. • The processes are segregated. Each process is dedicated to manufacturing the same chemical. o Note: Where products that may differ only by being a variation of the same chemical (i.e. dihydrate vs. anhydrous) and they are manufactured in the same process equipment, the change-over procedures and check-lists have been defined to ensure that the equipment is properly decontaminated. • Product-contact air is filtered • Product is screened before packaging • Product goes through Magnetic Separators which segregates magnetic particles from the product before it is packaged. • Product goes through a Metal Detector which determines metal contamination and separates the product. • Contamination Prevention Incidents are documented using *Process Deviation Reports (CH-A01-5005 and CH-A03-5010)* • Product rejected due to contamination are reported by the QA Lab monthly in the QA Finished Product Reports, and the Investigation defines the Root Causes and the Corrective Action to prevent re-occurrence. • The non-conforming product is controlled as per procedure CH-QAP-13. • Finish product QA Lab tests (pad tests, microscopic evaluation, product assay are designed to determine when product may be contaminated **Program Verification** • *Process Deviation Reports (CH-A01-5005 and CH-A03-5010)* • *Change-over checklists* • Screen inspection report • Magnet Cleaning Reports • Metal Detector Logs • QA Lab Finished Product Reports **Program Validation** • Management Review Meeting – Review of QA Lab statistical results, Product CpK, Nonconformance reports • Industry Best Practice to prevent cross-contamination by physically separating the processes.
ALLERGEN CONTROLS	The objective of this program is to minimize food safety risks by eliminating possible allergen contamination of the Chicago Heights products. **Program Components** • There are no raw materials or Finished Products containing allergens • There are no packaging supplies containing allergens • There are no maintenance or equipment supplies containing allergens

	• Vending machines do not supply any products with loose peanuts • Employees/contract workers are trained not to bring into the plant any loose peanuts • Procedural and administrative control of the places where employees eat during breaks. • Employees are provided clean uniforms daily. • Allergen training – plant wide during the GMP Training sessions. **Program Verification** • Training records • Vending machines inspections by management and employees • On-site audits performed at Suppliers for Raw Materials and Packaging. **Program Validation** • Third party audits • Allergen Risk Assessment completed by the Quality Unit Engineer. (Document CH-GMP-1014) • Protective Clothing Risk Assessment completed by the Quality Unit Engineer (Document CH-GMP-1016) • Industry Best Practice to minimize possible allergen contamination and food safety risks.
ADDITIONAL PROGRAMS	

GOOD MANUFACTURING PRACTICES	The goal of the Good Manufacturing Practices (GMP) Program is to provide safe and legal products, at the highest quality and meeting customer requirements.
	
	Program Components (As described in *Good Manufacturing Practices, (CH-GMP-1000)*
	• Contamination Prevention – See Prerequisite Program, above
	• Personnel Practices include:
	  o Employee reports of any open sores, communicable disease, etc.
	  o Use of metal detectable Band-Aids.
	  o Wearing of clean uniforms.
	  o Jewelry, perfume, and fingernail policy.
	  o No food or drink in processing and packaging areas.
	  o Use of hairnets and beard covers.
	  o Washing hands – *See Personal Hygiene Prerequisite Program*
	• Glass, Ceramics, and Hard or Brittle Plastic Control Policy
	  o Risk Assessments have been performed and documented. (*CH-GMP-5057*)
	  o Documented daily and monthly audits are performed based on risk. *(CH-PMX-5002, CH-SAP-5012)*
	  o Missing objects and breakage are documented on *Process Deviation Reports (CH-A01-5005)*
	• Control of Sharps, Knives, Cutting blades on Equipment, Needles and Wires
	  o Knives are numbered and assigned to individuals.
	• Pest Control Principles (Detailed separately)
	• Sanitary Conditions include:

- Adequate running potable water.
- Adequate and clean restrooms.

- Production Guidelines – Inspection, Storage, Manufacturing practices include:
  - Raw material receiving and storage
  - Material to be reprocessed is labeled as such.
  - Contaminated incoming materials are rejected.
  - Doors and windows must be screened or closed.
  - Definition of open and closed equipment.
  - Departments provide building and equipment cleaning procedures, schedules, and documentation. (See Cleaning and Sanitation section for details.)
- Cleaning Tools
  - Using the proper tools
  - No wood handled tools.
  - Color Coding:
    - Blue Brushes are dedicated to cleaning the product-contact surfaces;
    - White bristle brushes are dedicated for cleaning non-product contact surfaces and building structures
    - Janitorial cleaning tools are segregated from production cleaning tools
- Packaging and Bulk Loading practices include:
  - Procedures and equipment must protect product from contamination.
  - Proper labeling of finished product
  - Condition of bulk loading areas.
  - Dealing with spillage and leaking containers.
  - Empty pallet inspection.
- General Maintenance practices include:
  - Door gaps and openings in walls addressed.
  - Only food grade lubricants to be used.
  - Maintenance practices.
  - No wood handled tools.
- Quality Control Guidelines include:
  - Testing is done with proper regulatory requirements.
  - Nonconforming products and customer complaints related to contamination are investigated and corrective actions are taken immediately.
- Warehouse and Storage Conditions practices include:
  - Outside openings in storage areas.
  - Cleaning of warehouse and storage areas.
- Trash and Waste Handling include:
  - Use of covered trash containers.
  - Finished product containers not to be used.
- Plant Grounds practices include:
  - Free of weeds and standing water.
  - Proper approaches to entrances.
  - Proper drainage under storage areas.
- Design and Construction of Buildings and Equipment practices include:
  - Adequate space around equipment for cleaning, inspection, and pest control.
  - “Closed” equipment where possible.
  - Non contaminating ventilation.

GMP Program Verification

- Internal Audits (per Internal Audits Procedure (CH-QAP-17))
- Monthly GMP Audits- Good Manufacturing Practices Inspection Checklist (CH-GMP-5053)

GMP Program Validation

- Daily Management Observations (Daily Instructions)
- Customer Audits
- 3rd Party Audits

CAPA PROGRAM (CORRECTIVE AND PREVENTIVE ACTION)

The objective of the CAPA System is to identify and manage improvement initiatives, corrective and preventive actions at the Chicago Heights Plant. The CAPA System applies to initiatives proposed to improve the processes, products, the Quality Management System or the Food Safety System.

Program Components (Defined in Procedure CH-QAP-14)

- Improvement suggestions and initiatives may be generated from various sources.
- Corrective Actions are initiated as a result of non-conformances or deficiencies discovered in processes, products, the Quality Management System or the Food Safety System;
- Preventive Actions are initiated by the identification of a potential cause of a nonconformance or deficiency in processes, products, the Quality Management System or the Food Safety System;
- Non-conformances are investigated using root cause analysis method and assessment of the impact of taking no action to prevent recurrence. Actions are prioritized, implemented, and monitored through completion, then reviewed to assess effectiveness.
- A Nonconformance Investigation is required when:
  - An Internal Audit identifies a non-conformance.
  - An External Audit identifies a Quality Management System nonconformance.
  - A Quality Management System fault or failure is identified.
  - The Management Review process identifies a nonconformance.
  - A Customer Complaint is received.
  - A Food Safety Audit identifies a nonconformance.
- A Preventive Action Investigation is required when:
  - A potential quality or food safety nonconformance is identified by a HACCP, PHMP, or PM study.
  - A potential quality nonconformance is identified through a process capability study.
  - There is evidence to suggest that the Quality Management System, Food Safety System, one of the Chicago Heights processes, plant equipment, product or manufacturing process can be improved so as to prevent a nonconformance from occurring.
  - There is evidence from employee input of failure in similar or related processes.

Program Verification

- CAPA ETQ Records (Electronic format)
- Internal Audits (per Internal Audits Procedure (CH-QAP-17))

	Program Validation • Third party audits • Management Review Meetings review of improvement suggestions, status of CAPA entries and evaluation of the maturity of the system.
CUSTOMER COMPLAINT PROGRAM:	The objective of this program is to minimize food safety risks by implementing Corrective and Preventive Actions to improve present systems and eliminate possible repeats of customer complaints. **Program Components** • Innophos records and tracks customer complaints in EtQ software. • Customer Complaints are investigated by appropriate knowledgeable person to determine the Root Causes and define Corrective and Preventive action. Documented investigations are required of the department responsible for that activity with corrective actions taken to prevent reoccurrence. As per Procedure CH-QAP-14. • The approved Corrective and Preventive Actions are implemented • The implemented actions are verified that they achieved the purpose to eliminate re-occurrence. • Trends or repeat occurrences, which may indicate an underlying problem, are evaluated and action is taken during the Management Reviews. • The HACCP and prerequisite programs are re-evaluated when food safety concerns are noted in the market place. • Customer Complaint reports are evaluated and approved by the Quality Assurance Manager at Corporate. **Program Verification** • Records of the Customer Complaints in EtQ. **Program Validation** • Third party audits • Management Review Meetings evaluate the effectiveness of the Customer Complaints Program
RECALL / TRACEABILITY PROGRAM	The objective of this program is to minimize food safety risks to customers by implementing the traceability capability and recall procedure to be able to notify customers in the event when a product needs to be taken off market. **Program Components** • Innophos has documented policies and procedures to recall product produced at the plant and distributed to customers. • The traceability and recall capability of the plant is tested twice a year to determine weaknesses and strengthen the system. • The final Mock Recall Report includes percent recovery. • When deficiencies are noted in the program, the procedures are revised and personnel receive further training. • Traceability records for packaging material, raw material usage, packaging codes, and distribution records are kept for seven years. • The proper labeling of the manufactured product on a day to day basis will be the responsibility of the production department and verified by supervision.

	Program Verification • Records of the Mock Recalls. **Program Validation** • Third party audits • Results are communicated to the Quality Assurance Manager for evaluation • Management Review Meetings evaluate the effectiveness of the Mock Recalls.

CHEMICAL CONTROL PROGRAM	The scope of the Chemical Control Program is minimize food safety risks by controlling all chemicals used in the Chicago Heights plant, evaluating their impact on Food Safety, Environment, Employee Health and Chemical Processes.
	
	The control of chemicals in raw materials and packaging materials will be addressed separately by our supplier certification program and ingredient hazard analysis.
	
	Program Components
	• Chemical Control Program defined in *Chemical Control Policy (CH-HSE-SAF-0500)*
	• The plant maintains a control program for cleaning compounds, maintenance chemicals, and pest control chemicals.
	• All chemicals purchased at the plant are reviewed by the Regional Environmental Manager to insure that they are appropriate for use in a food plant.
	• All personnel using chemicals are trained for proper usage, application, and use of PPE where appropriate.
	
	Program Verification
	• Approval form New Chemical Usage Request *(CH-HSE-SAF-5007)*
	
	Program Validation
	• Our internal audit program and a review of our corrective action records will verify the use of approved plant chemicals
	• Managerial control of spending
	  o Managers approve Expense Accounts,
	  o Purchasing approves and issues Purchase Orders
	  o Storeroom Manager approves chemical additions to the stored items
	• Management daily supervision of usage of unapproved chemicals
	• MSRR Audit (performed by Innophos – Corporate)

CONTROL OF FOOD GRADE LUBRICANTS AND NON-FOOD GRADE LUBRICANTS	The scope of the Food Grease Program is minimize food safety risks by controlling the lubricants used in the Chicago Heights plant and segregating the non-food grade lubricants from the food grade grease.
	
	Program Components
	• Non-food grade lubricants controlled per Non-Food Grade Lubricants SOP (CH-GMP-1040)
	• Lubricants will be dispensed from color coded and labeled containers:
	  ▪ Non-food grade – Coded **Black**
	  ▪ Food-grade – Coded **Red**

- Non-food grade lubricants are only to be stored in dedicated and labeled cabinets.
- Color coded tags or grease caps will be installed at each use point of any non-food grade lubricant in the processing plant.
- A log sheet is located in each cabinet. Maintenance technicians will enter any use of non-food grade lubricants on a log sheet located at each cabinet.
- Approval by the Quality Unit Manager is required to add any equipment to the non-food grade lubricant list (CH-GMP-1040 / Attachment 1).
- The non-food grade lubricants are stored in labeled and locked cabinets located in building #9 (Plant air compressors) and building #19 (Trical process air compressor).

Program Verification

- Issue tickets - for taking grease out of the Storeroom.

Program Validation

- Maintenance and Production Coordinators daily supervision of correct usage of grease guns by checking color codes
- Trical Oil Risk Assessment by the Quality Unit Engineer (Document CH-GMP-1018).
- Industry Best Practice to color code, label and control the non-food grade grease.

FOOD DEFENSE PROGRAM

The objective of the Food Defense program is to minimize food safety risks to processes and products at the Chicago Heights Plant by regularly evaluating the strength of the security system at the plant to avert any security breaches intended to contaminate the product.

Program Components

- The plant has defined a Food Defense Plan (Document CH-GMP-1000)
- The Responsibilities for Food Defense have been defined (Document CH-GMP-5059)
- The Food Defense Team performs quarterly walkthroughs and documents the results (Form CH-GMP-5060)
- The Food Defense Team reviews the program annually.
- The Food Defense Plan addresses:
  - Plant Access
  - Visitors
  - Inspections of Incoming Materials
  - Finished Product Safety

Program Verification

- Records of the Food Defense Team inspections. (Form CH-GMP-5060)

Program Validation

- Third party audits
- Industry Best Practice documented by AIB (American Institute of Baking).

PLAN REVIEW

PLAN REVIEW	This HACCP plan will be reviewed by the HACCP team before any changes are made that may affect product safety. The plant's Management of Change Procedure (CH-MOC-1001) will identify the need for the review. These may include the following: • Change of raw materials or suppliers of raw materials • Changes in ingredients and/or recipe • Changes in processing conditions or equipment • Changes in packaging, storage or distribution conditions • Changes in staff or management responsibilities • Changes in consumer use • Developments in scientific information associated with ingredients, process or product Appropriate changes resulting from the review shall be incorporated into the HACCP plan, fully documented, and validated.
ANNUAL PLAN REVIEW	Irrespective to any of the above changes, the HACCP plan will be reviewed annually. This will include the following: • CCP failures in the previous year • Major nonconformities that may effect product safety • Customer complaints of a food safety nature • Change of raw materials or suppliers of raw materials • Changes in ingredients and/or recipe • Changes in processing conditions or equipment • Changes in packaging, storage or distribution conditions • Changes in staff or management responsibilities • Changes in consumer use • Emergence of a new risk, for example, adulteration of an ingredient • Developments in scientific information associated with ingredients, process or product The review of the above items will be documented in the Annual HACCP Review Minutes. Appropriate changes resulting from the annual review shall be incorporated into the HACCP plan, fully documented, and validated.

RISK ASSESSMENT

LIKELIHOOD X SEVERITY

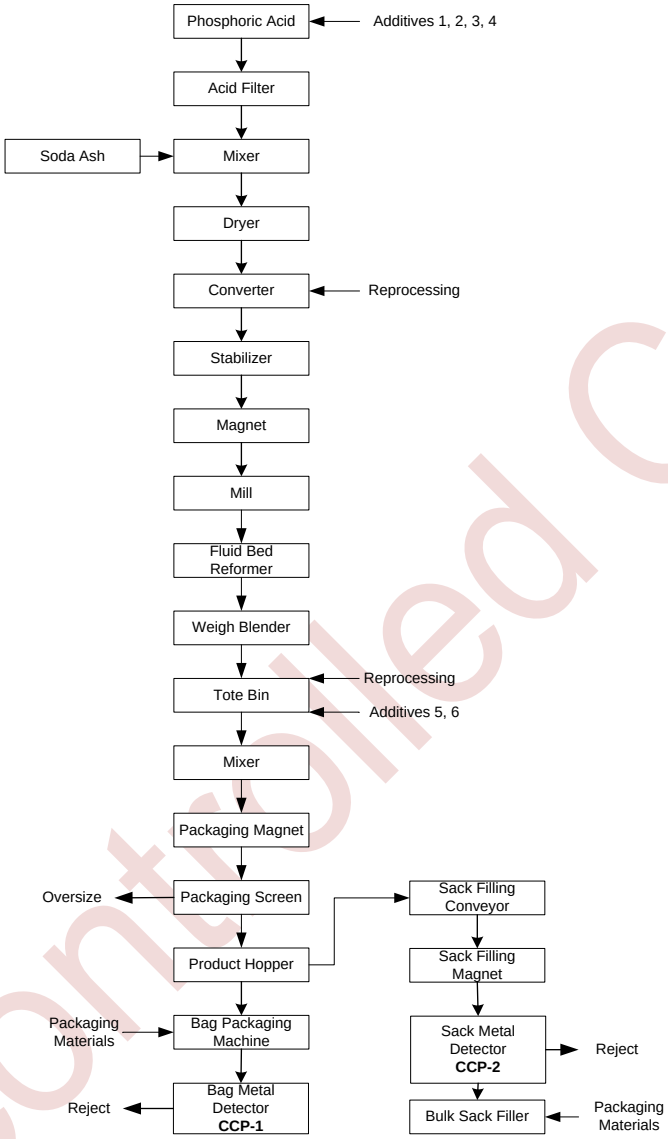
Severity of Illness or Injury				
Life Threatening (High Health Risk)	Medium	Medium	High	High
Severe or chronic illness / injury (Medium Health Risk)	Medium	Medium	High	High
Mild illness / injury (Low Health Risk)	Low	Low	Medium	High
	Negligible	Low	Medium	High

Likelihood
Probability of Occurrence

RISK ASSESSMENT – ACTIONS

Low Risk	**Identify the prevention measures followed.** The potential food safety issue is prevented by: • The supplier (supplier controls) • The manufacturing facilities prerequisite programs.
Medium Risk	**Determine if additional prerequisite strength is needed or if a downstream elimination / reduction process step is necessary.** Determine, for your raw material use, process, finished product, and plant culture, if the identified food safety issue is adequately addressed.
High Risk	**Identify the potential downstream elimination / reduction processing step – Potential CCP**. The potential food safety issue is not fully prevented by the supplier or the manufacturing facility's prerequisite program.

HACCP PROCESS FLOW DIAGRAM



FLOW DIAGRAM APPROVAL

PRODUCTION ENGINEER	
HACCP COORDINATOR	

HACCP FINISHED PRODUCT PROFILE

GENERAL PRODUCT INFORMATION

PRODUCT NAME(S)	Taterfos®, Donut Pyro®, B.P. Pyro®, Victor Cream®, SAPP #4®, Perfection®; CAS # 7758-16-9
INTENDED CONSUMERS, INTENDED USE	Used by food processors as a leavening acid. In baking powder and baking cream. Also, other miscellaneous food applications. The general public will be the consumers of these finished products, including all ages and categories of people.
METHOD OF STORAGE / DISTRIBUTION	Store cool and dry. Packaged in multiwall kraft bags and bulk sacks. All containers meet D.O.T. requirements and food grade (bulk sacks) packaging materials. To maintain product integrity, bag spouts are sealed.
RETEST DATE / TRACEABILITY INFORMATION	Retest date is 24 months from date of manufacture. Traceability is through the lot number.

TECHNICAL PRODUCT INFORMATION

ASSAY ($Na_2H_2P_2O_7$)	**93.0% - 100.5%**
PH	**4.0 – 4.5**
ARSENIC (AS)	**3 ppm max.**
FLUORIDE (F)	**50 ppm max.**
LEAD (PB)	**2 ppm max.**
INSOLUBLE SUBSTANCES	**1% max.**

FOOD SAFETY INFORMATION

POTENTIAL FOR CUSTOMER MISUSE	**For Manufacturing Use Only.** Store / Ship in DOT Approved Containers
CAN THIS PRODUCT CAUSE FOOD BORNE ILLNESS OR INJURY?	Avoid direct contact with skin, eyes, clothing. Wear appropriate protective clothing and devices when handling. Wash thoroughly after handling. Avoid breathing dust. *For eye contact*, hold eyelids apart and flush eyes with large amounts of running water for at least 15 minutes. Call a physician. *For skin contact*, flush with plenty of water for at least 15 minutes. Remove all contaminated clothing and shoes. Get medical attention if irritation occurs. Wash clothing before reuse.
VULNERABILITY OF THE CONSUMING PUBLIC TO IDENTIFIED HAZARDS	The consuming public will be exposed to the product referred to in this plan as an ingredient of a food product. The manufacturer in many cases will be a regulated (FDA, EFSA, etc.) facility. Based on this and the hazard descriptions there is very little risk to any age or category of consumer.
EXPLAIN ANY PRODUCT , PARAMETER, OR PROGRAM ESSENTIAL TO	Handle as directed in MSDS and per cGMP's. Consumers of the finished products should follow instructions included with the product.

PREVENTING THE ABOVE ILLNESS OR INJURY?	
ADULTERATION / DELIBERATE CONTAMINATION	The risk of adulteration / deliberate contamination has been considered in this plan. The Food Defense Plan, as defined in the Good Manufacturing Practices Procedure (CH-GMP-1000), is the prerequisite program in place to control this hazard.

RAW MATERIAL HAZARD ANALYSIS

LIST ALL INGREDIENTS USED IN THE PRODUCT, PROCESS, OR PLANT.	IDENTIFY KNOWN HAZARDS		RISK ASSESSMENT: LIKELIHOOD	RISK ASSESSMENT: SEVERITY	IS THIS HAZARD SIGNIFICANT[1] (YES/NO)?	IDENTIFY PREREQUISITE PROGRAMS OR PROCESS STEPS TO REDUCE OR ELIMINATE KNOWN HAZARDS.
Phosphoric Acid	B	None	-	-	No	Phosphoric acid does not support microbial growth. (*FDA's Evaluation and Definition of Potentially Hazardous Foods, Chapter 3. Factors that Influence Microbial Growth, http://www.fda.gov/Food/ScienceResearch/ResearchAreas/SafePracticesforFoodProcesses/ucm094145.htm)*
	C	Yes – Heavy Metals *(per Raw Material Specification for 75% Phosphoric Acid CH-RMS-100)*	L	M	Yes	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Raw Material Receiving Procedures *(Handling, Storage, Packaging, Preservation and Delivery CH-QAP-15)* *(Phosphoric Acid Railcar Unloading Procedure CH-PPA-1006)* *(Raw Material Specification for 75% Phosphoric Acid CH-RMS-100)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	Yes	Acid Filter (850µ rated) –Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet - Bag Metal Detector – Sack Metal Detector
Sodium Carbonate (Soda Ash)	B	None	-	-	No	Sodium Carbonate does not support microbial growth. (*FDA's Evaluation and Definition of Potentially Hazardous Foods, Chapter 3. Factors that Influence Microbial Growth, http://www.fda.gov/Food/ScienceResearch/ResearchAreas/SafePracticesforFoodProcesses/ucm094145.htm)*
	C	Yes – Heavy Metals (*per Raw Material Specification for Sodium Carbonate, CH-RMS-150*)	L	M	Yes	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Raw Material Receiving Procedures *(Handling, Storage, Packaging, Preservation and Delivery CH-QAP-15)* *(Soda Ash Unloading and System Start-Up, CH-DIL-1003)* *(Raw Material Unloading Report, CH-A01-5004)* *(Raw Material Specification for Sodium Carbonate, CH-RMS-150)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*

	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	Yes	Yes –Process Magnet - Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet - Bag Metal Detector – Sack Metal Detector
Reprocessing	B	None	-	-	No	SAPP does not support microbial growth. (*conclusion of "Challenge Study of Ten Powders" performed by Silliker Laboratories, Research Report# RPN2413*)
	C	Yes – Improper material reprocessed.	L	L	No	QA Grades Material PR (*Dispositioner's Manual, CH-LAB-0000*) Reprocessed material is controlled. (*Control of Nonconforming Product, CH-QAP-13*)
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	L	No	Yes –Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet - Bag Metal Detector – Sack Metal Detector
Additive 1	B	None	-	-	No	Additive 1 in phosphoric acid solution does not support microbial growth. (*FDA's Evaluation and Definition of Potentially Hazardous Foods, Chapter 3. Factors that Influence Microbial Growth, http://www.fda.gov/Food/ScienceResearch/ResearchAreas/SafePracticesforFoodProcesses/ucm094145.htm)*
	C	Yes – Heavy Metals *(per Dispositioner's Manual, CH-LAB-0000)*	L	L	No	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Raw Material Receiving Procedures *(Handling, Storage, Packaging, Preservation and Delivery CH-QAP-15) (Dispositioner's Manual, CH-LAB-0000)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	L	No	Acid Filter (850µ rated) – Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet - Bag Metal Detector – Sack Metal Detector
Additive 2	B	None	-	-	No	Additive 2 in phosphoric acid solution does not support microbial growth. (*FDA's Evaluation and Definition of Potentially Hazardous Foods, Chapter 3. Factors that Influence Microbial Growth, http://www.fda.gov/Food/ScienceResearch/ResearchAreas/SafePracticesforFoodProcesses/ucm094145.htm)*
	C	Yes – Heavy Metals *(per product specification from supplier)*	L	L		Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Raw Material Receiving Procedures *(Handling, Storage, Packaging, Preservation and Delivery CH-QAP-15) (CoA from supplier)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*

	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	L	No	Acid Filter (850µ rated) – Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet - Bag Metal Detector – Sack Metal Detector
Additive 3	B	None	-	-	No	Additive 3 in phosphoric acid solution does not support microbial growth. (*FDA's Evaluation and Definition of Potentially Hazardous Foods, Chapter 3. Factors that Influence Microbial Growth, http://www.fda.gov/Food/ScienceResearch/ResearchAreas/SafePracticesforFoodProcesses/ucm094145.htm)*
	C	Yes – Heavy Metals *(per Raw Material Specifications for raw materials for Additive 3, CH-RMS-101 and CH-RMS-144)*	L	L	No	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Raw Material Receiving Procedures *(Handling, Storage, Packaging, Preservation and Delivery CH-QAP-15)* *(Raw Material Specifications for raw materials for Additive 3, CH-RMS-101 and CH-RMS-144)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	L	No	Acid Filter (850µ rated) – Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet - Bag Metal Detector – Sack Metal Detector
Additive 4	B	None	-	-	No	Additive 4 in phosphoric acid solution does not support microbial growth. (*FDA's Evaluation and Definition of Potentially Hazardous Foods, Chapter 3. Factors that Influence Microbial Growth, http://www.fda.gov/Food/ScienceResearch/ResearchAreas/SafePracticesforFoodProcesses/ucm094145.htm)*
	C	Yes – Heavy Metals *(per Dispositioner's Manual, CH-LAB-0000 and Raw Material Specification for Additive 4, CH-RMS-172)*	L	L	No	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Raw Material Receiving Procedures *(Handling, Storage, Packaging, Preservation and Delivery CH-QAP-15)* *(Dispositioner's Manual, CH-LAB-0000)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	L	No	Acid Filter (850µ rated) – Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet - Bag Metal Detector – Sack Metal Detector
Additive 5	B	None	-	-	No	Additive 5 does not support microbial growth. (*Conclusion of Spoilage Organism and Pathogenic Organism Challenge Study performed by DonLevy Laboratories, final report dated 04/02/10*)
	C	Yes – Heavy Metals *(per Dispositioner's Manual, CH-LAB-0000)*	L	L	No	Approved Raw Material Supplier *(Purchasing CH-QAP-06)*

						Raw Material Receiving Procedures *(Handling, Storage, Packaging, Preservation and Delivery CH-QAP-15)* *(Dispositioner's Manual, CH-LAB-0000)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	L	No	Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector
Additive 6	B	None	-	-	No	Additive 5 does not support microbial growth. (*FDA's Evaluation and Definition of Potentially Hazardous Foods, Chapter 3. Factors that Influence Microbial Growth, http://www.fda.gov/Food/ScienceResearch/ResearchAreas/SafePracticesforFoodProcesses/ucm094145.htm)*
	C	Yes – Heavy Metals *(per Raw Material Specification for Additive 3, CH-RMS-148)*	L	L	No	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Raw Material Receiving Procedures (*Receiving and Unloading, CH-WHS-1005*) *(Handling, Storage, Packaging, Preservation and Delivery CH-QAP-15)* *(Raw Material Specification for Additive 3, CH-RMS-148)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	L	No	Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet - Bag Metal Detector – Sack Metal Detector
Packaging Materials	B	Yes – Mold growth on paper / wood.	L	L	No	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Supplier's letters of guarantee. (*On File*) Inspection of Incoming Packaging Supplies for Mold, Insect, or Rodent Activity (*CQAP – 13*; *Incoming Packaging Supplies Receiving Form, CH-WHS-5004*) Determination of Moisture Content in Pallets (*CQAP – 11*; *Pallet Inspection Form, CH-WHS-5001*)
	C	Yes – Non-food chemicals used in packaging construction.	L	L	No	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Supplier's letters of guarantee. (*On File*)
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	L	No	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Empty bag inspection upon receipt. (*Receiving and Unloading SOP, CH-WHS-1005*)

Hazards: B = Biological, C = Chemical, P = Physical
Risk Assessment: H = High, M = Medium, L = Low, N = Negligible

(1) Significant hazard: Any hazard having High (H) or Medium (M) in any Risk Assessment (Likelihood or Severity) must be considered a significant hazard. Any raw material with a significant hazard must be brought forward to the Process Hazard Analysis form for further analysis.

Non significant hazards are not transferred to the Process Hazard form.

PROCESS HAZARD ANALYSIS

(1)	(2) – Introduction or Intensification				(3) – Control / Prevention	(4) – Downstream elimination or reduction to acceptable level	(5) - CCP
List every Raw Material with significant hazard(s) as previously identified in the Raw Material Hazard Analysis. List every process step from Receiving to Shipping, shown on the Process Flow Diagram in the Plan. Go to column 2. Note: If this is a last process step identified in Column 4, list the hazard eliminated in Column 2.	Does this raw material or process step INTRODUCE or INTENSIFY a potential food safety hazard? Consider only hazards with a significant risk. (Use Likelihood and Severity to help determine this.) If YES, identify hazard(s). (Be as specific as possible when listing the hazard and its source.) (List Significant Hazards from the Raw Material Hazard Analysis for Raw Materials) If NO Hazard is identified, write "NONE." Go to column 3.		Risk Assessment H= High M = Medium L = Low N = Negligible Likelihood	Severity	Is the hazard(s) identified in Column 2 CONTROLLED by Support Program(s) (Prerequisite or Process)? If YES, list all of the Support Program(s) that will control the introduction or intensification of the hazard(s) identified in Column 2. If NO Support Program is identified, write "NONE." Go to column 4.	Is this hazard ELIMINATED (reduced to an acceptable level) at this or a later process step? If NO, write "none" and continue to the next hazard or process step. If YES, identify the last process step where it will be Eliminated. If you are at that process step (Column 1 matches Column 4), proceed to column 5; if not, go to the next hazard or process step. Note: If no Control or Elimination is identified in Column 3 or 4 and these are necessary for food safety, you must stop, modify the step, process, product, or Support Programs.	Can a viable product still be produced if the process step listed in Column 4 fails? If YES, this step must be considered a CCP: identify the CCP number. If NO, this is not a CCP. Enter NO and justification for answer (Viable Product, Process Control, similar elimination further on in the process, etc.). Go to the next hazard or process step.
Incoming Phosphoric Acid	**B**	None	-	-	Phosphoric acid does not support microbial growth. (*FDA's Evaluation and Definition of Potentially Hazardous Foods, Chapter 3. Factors that Influence Microbial Growth, http://www.fda.gov/Food/ScienceResearch/ResearchAreas/SafePracticesforFoodProcesses/ucm094145.htm)*		
	C	Yes - Heavy Metals *(per Raw Material Specification for 75% Phosphoric Acid CH-RMS-100)*	L	M	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Raw Material Receiving Procedures *(Handling, Storage, Packaging, Preservation and Delivery CH-QAP-15) (Phosphoric Acid Railcar Unloading Procedure CH-PPA-1006) (Raw Material Specification for 75% Phosphoric Acid CH-RMS-100)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*	None - Must be identified and controlled at this step.	
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Raw Material Receiving Procedures *-Handling, Storage, Packaging, Preservation and Delivery (CH-QAP-15) -Phosphoric Acid Railcar Unloading Procedure (CH-PPA-1006) -Raw Material Specification for 75% Phosphoric Acid (CH-RMS-100)*QA *Analysis* GMP Procedures *(Good Manufacturing Practices CH-GMP-1000) (Policy on Foreign Contamination CH-GMP-1000)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*	Yes - Acid Filter (850µ rated) - Process Magnet - Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	

PROCESS HAZARD ANALYSIS

(1)	(2) – Introduction or Intensification				(3) – Control / Prevention	(4) – Downstream elimination or reduction to acceptable level	(5) - CCP
List every Raw Material with significant hazard(s) as previously identified in the Raw Material Hazard Analysis. List every process step from Receiving to Shipping, shown on the Process Flow Diagram in the Plan. Go to column 2. Note: If this is a last process step identified in Column 4, list the hazard eliminated in Column 2.		Does this raw material or process step INTRODUCE or INTENSIFY a potential food safety hazard? Consider only hazards with a significant risk. (Use Likelihood and Severity to help determine this.) If YES, identify hazard(s). (Be as specific as possible when listing the hazard and its source.) (List Significant Hazards from the Raw Material Hazard Analysis for Raw Materials) If NO Hazard is identified, write "NONE." Go to column 3.	Risk Assessment H= High M = Medium L = Low N = Negligible Likelihood	Severity	Is the hazard(s) identified in Column 2 CONTROLLED by Support Program(s) (Prerequisite or Process)? If YES, list all of the Support Program(s) that will control the introduction or intensification of the hazard(s) identified in Column 2. If NO Support Program is identified, write "NONE." Go to column 4.	Is this hazard ELIMINATED (reduced to an acceptable level) at this or a later process step? If NO, write "none" and continue to the next hazard or process step. If YES, identify the last process step where it will be Eliminated. If you are at that process step (Column 1 matches Column 4), proceed to column 5; if not, go to the next hazard or process step. Note: If no Control or Elimination is identified in Column 3 or 4 and these are necessary for food safety, you must stop, modify the step, process, product, or Support Programs.	Can a viable product still be produced if the process step listed in Column 4 fails? If YES, this step must be considered a CCP: identify the CCP number. If NO, this is not a CCP. Enter NO and justification for answer (Viable Product, Process Control, similar elimination further on in the process, etc.). Go to the next hazard or process step.
Sodium Carbonate (Soda Ash)	**B**	None	-	-	Sodium Carbonate does not support microbial growth. (*FDA's Evaluation and Definition of Potentially Hazardous Foods, Chapter 3. Factors that Influence Microbial Growth, http://www.fda.gov/Food/ScienceResearch/ResearchAreas/SafePracticesforFoodProcesses/ucm094145.htm)*		
	C	Yes – Heavy Metals	L	M	Approved Raw Material Supplier *(Purchasing CH-QAP-06)* Raw Material Receiving Procedures *(Handling, Storage, Packaging, Preservation and Delivery CH-QAP-15) (Soda Ash Unloading and System Start-Up, CH-DIL-1003) (Raw Material Unloading Report, CH-A01-5004) (Raw Material Specification for Sodium Carbonate, CH-RMS-150)* Periodic QA Analysis of Raw Materials *(Technicians Manual, Regulatory C Table; CH-LAB-7000)*	None - Must be identified and controlled at this step.	
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000) (Policy on Foreign Contamination CH-GMP-1000)*	Yes – Process Magnet - Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	

PROCESS HAZARD ANALYSIS

(1)	(2) – Introduction or Intensification				(3) – Control / Prevention	(4) – Downstream elimination or reduction to acceptable level	(5) - CCP
List every Raw Material with significant hazard(s) as previously identified in the Raw Material Hazard Analysis. List every process step from Receiving to Shipping, shown on the Process Flow Diagram in the Plan. Go to column 2. Note: If this is a last process step identified in Column 4, list the hazard eliminated in Column 2.		Does this raw material or process step INTRODUCE or INTENSIFY a potential food safety hazard? Consider only hazards with a significant risk. (Use Likelihood and Severity to help determine this.) If YES, identify hazard(s). (Be as specific as possible when listing the hazard and its source.) (List Significant Hazards from the Raw Material Hazard Analysis for Raw Materials) If NO Hazard is identified, write "NONE." Go to column 3.	Risk Assessment H= High M = Medium L = Low N = Negligible Likelihood	Severity	Is the hazard(s) identified in Column 2 CONTROLLED by Support Program(s) (Prerequisite or Process)? If YES, list all of the Support Program(s) that will control the introduction or intensification of the hazard(s) identified in Column 2. If NO Support Program is identified, write "NONE." Go to column 4.	Is this hazard ELIMINATED (reduced to an acceptable level) at this or a later process step? If NO, write "none" and continue to the next hazard or process step. If YES, identify the last process step where it will be Eliminated. If you are at that process step (Column 1 matches Column 4), proceed to column 5; if not, go to the next hazard or process step. Note: If no Control or Elimination is identified in Column 3 or 4 and these are necessary for food safety, you must stop, modify the step, process, product, or Support Programs.	Can a viable product still be produced if the process step listed in Column 4 fails? If YES, this step must be considered a CCP: identify the CCP number. If NO, this is not a CCP. Enter NO and justification for answer (Viable Product, Process Control, similar elimination further on in the process, etc.). Go to the next hazard or process step.
Acid Filter	**B**	None.	-	-			
	C	None	-	-			
	P	No new potential foreign material introduction at this step. Identified as downstream elimination for potential foreign material.	-	-		Yes - Acid Filter (850µ rated)	No – Similar elimination step further in process.
Mixer	**B**	None	-	-			
	C	Yes – Lubricant	L	L	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* Maintenance Procedures *(Non-Food Grade Lubricant CH-GMP-1040)* QA Lab Finished Product Analysis *(Dispositioner's Manual, CH-LAB-0000)*	None - Must be identified and controlled at this step.	
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* *(Policy on Foreign Contamination CH-GMP-1000)*	Yes – Process Magnet - Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	
Blender	**B**	None	-	-			
	C	Yes – Lubricant	L	L	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* Maintenance Procedures *(Non-Food Grade Lubricant CH-GMP-1040)*	None - Must be identified and controlled at this step.	

PROCESS HAZARD ANALYSIS

(1)	(2) – Introduction or Intensification				(3) – Control / Prevention	(4) – Downstream elimination or reduction to acceptable level	(5) - CCP
List every Raw Material with significant hazard(s) as previously identified in the Raw Material Hazard Analysis. List every process step from Receiving to Shipping, shown on the Process Flow Diagram in the Plan. Go to column 2. Note: If this is a last process step identified in Column 4, list the hazard eliminated in Column 2.		Does this raw material or process step INTRODUCE or INTENSIFY a potential food safety hazard? Consider only hazards with a significant risk. (Use Likelihood and Severity to help determine this.) If YES, identify hazard(s). (Be as specific as possible when listing the hazard and its source.) (List Significant Hazards from the Raw Material Hazard Analysis for Raw Materials) If NO Hazard is identified, write "NONE." Go to column 3.	Risk Assessment H= High M = Medium L = Low N = Negligible Likelihood	Severity	Is the hazard(s) identified in Column 2 CONTROLLED by Support Program(s) (Prerequisite or Process)? If YES, list all of the Support Program(s) that will control the introduction or intensification of the hazard(s) identified in Column 2. If NO Support Program is identified, write "NONE." Go to column 4.	Is this hazard ELIMINATED (reduced to an acceptable level) at this or a later process step? If NO, write "none" and continue to the next hazard or process step. If YES, identify the last process step where it will be Eliminated. If you are at that process step (Column 1 matches Column 4), proceed to column 5; if not, go to the next hazard or process step. Note: If no Control or Elimination is identified in Column 3 or 4 and these are necessary for food safety, you must stop, modify the step, process, product, or Support Programs.	Can a viable product still be produced if the process step listed in Column 4 fails? If YES, this step must be considered a CCP: identify the CCP number. If NO, this is not a CCP. Enter NO and justification for answer (Viable Product, Process Control, similar elimination further on in the process, etc.). Go to the next hazard or process step.
					QA Lab Finished Product Analysis (*Dispositioner's Manual, CH-LAB-0000*)		
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* *(Policy on Foreign Contamination CH-GMP-1000)*	Yes – Process Magnet - Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	No – Similar elimination step further in process.
Dryer	**B**	None	-	-			
	C	None	-	-			
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* *(Policy on Foreign Contamination CH-GMP-1000)*	Yes – Process Magnet - Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	
Converter	**B**	None	-	-			
	C	None	-	-			
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* *(Policy on Foreign Contamination CH-GMP-1000)*	Yes – Process Magnet - Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	
Stabilizer	**B**	None	-	-			
	C	None	-	-			

PROCESS HAZARD ANALYSIS

(1)	(2) – Introduction or Intensification			Risk Assessment H= High M = Medium L = Low N = Negligible		(3) – Control / Prevention	(4) – Downstream elimination or reduction to acceptable level	(5) - CCP
List every Raw Material with significant hazard(s) as previously identified in the Raw Material Hazard Analysis. List every process step from Receiving to Shipping, shown on the Process Flow Diagram in the Plan. Go to column 2. Note: If this is a last process step identified in Column 4, list the hazard eliminated in Column 2.		Does this raw material or process step INTRODUCE or INTENSIFY a potential food safety hazard? Consider only hazards with a significant risk. (Use Likelihood and Severity to help determine this.) If YES, identify hazard(s). (Be as specific as possible when listing the hazard and its source.) (List Significant Hazards from the Raw Material Hazard Analysis for Raw Materials) If NO Hazard is identified, write "NONE." Go to column 3.	Likelihood	Severity	Is the hazard(s) identified in Column 2 CONTROLLED by Support Program(s) (Prerequisite or Process)? If YES, list all of the Support Program(s) that will control the introduction or intensification of the hazard(s) identified in Column 2. If NO Support Program is identified, write "NONE." Go to column 4.	Is this hazard ELIMINATED (reduced to an acceptable level) at this or a later process step? If NO, write "none" and continue to the next hazard or process step. If YES, identify the last process step where it will be Eliminated. If you are at that process step (Column 1 matches Column 4), proceed to column 5; if not, go to the next hazard or process step. Note: If no Control or Elimination is identified in Column 3 or 4 and these are necessary for food safety, you must stop, modify the step, process, product, or Support Programs.	Can a viable product still be produced if the process step listed in Column 4 fails? If YES, this step must be considered a CCP: identify the CCP number. If NO, this is not a CCP. Enter NO and justification for answer (Viable Product, Process Control, similar elimination further on in the process, etc.). Go to the next hazard or process step.
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* *(Policy on Foreign Contamination CH-GMP-1000)*	Yes – Process Magnet - Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	
Process Magnet	**B**	None.	-	-			
	C	None	-	-			
	P	No new potential foreign material introduction at this step. Identified as downstream elimination for potential foreign material.	-	-		Yes – Removes magnetic foreign contamination	No – Similar elimination step further in process.
Mill	**B**	None	-	-			
	C	Yes – Lubricant	L	L	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* Maintenance Procedures *(Non-Food Grade Lubricant CH-GMP-1040)* QA Lab Finished Product Analysis *(Dispositioner's Manual, CH-LAB-0000)*	None - Must be identified and controlled at this step.	
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* *(Policy on Foreign Contamination CH-GMP-1000)*	Yes – Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	
Fluid Bed Reformer	**B**	None	-	-			

PROCESS HAZARD ANALYSIS

(1)	(2) – Introduction or Intensification			Risk Assessment H= High M = Medium L = Low N = Negligible		(3) – Control / Prevention	(4) – Downstream elimination or reduction to acceptable level	(5) - CCP
List every Raw Material with significant hazard(s) as previously identified in the Raw Material Hazard Analysis. List every process step from Receiving to Shipping, shown on the Process Flow Diagram in the Plan. Go to column 2. Note: If this is a last process step identified in Column 4, list the hazard eliminated in Column 2.		Does this raw material or process step INTRODUCE or INTENSIFY a potential food safety hazard? Consider only hazards with a significant risk. (Use Likelihood and Severity to help determine this.) If YES, identify hazard(s). (Be as specific as possible when listing the hazard and its source.) (List Significant Hazards from the Raw Material Hazard Analysis for Raw Materials) If NO Hazard is identified, write "NONE." Go to column 3.	Likelihood	Severity	Is the hazard(s) identified in Column 2 CONTROLLED by Support Program(s) (Prerequisite or Process)? If YES, list all of the Support Program(s) that will control the introduction or intensification of the hazard(s) identified in Column 2. If NO Support Program is identified, write "NONE." Go to column 4.	Is this hazard ELIMINATED (reduced to an acceptable level) at this or a later process step? If NO, write "none" and continue to the next hazard or process step. If YES, identify the last process step where it will be Eliminated. If you are at that process step (Column 1 matches Column 4), proceed to column 5; if not, go to the next hazard or process step. Note: If no Control or Elimination is identified in Column 3 or 4 and these are necessary for food safety, you must stop, modify the step, process, product, or Support Programs.	Can a viable product still be produced if the process step listed in Column 4 fails? If YES, this step must be considered a CCP: identify the CCP number. If NO, this is not a CCP. Enter NO and justification for answer (Viable Product, Process Control, similar elimination further on in the process, etc.). Go to the next hazard or process step.
	C	None	-	-			
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* *(Policy on Foreign Contamination CH-GMP-1000)*	Yes – Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	
Weigh Blender	**B**	None	-	-			
	C	Yes – Lubricant	L	L	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* Maintenance Procedures *(Non-Food Grade Lubricant CH-GMP-1040)* QA Lab Finished Product Analysis *(Dispositioner's Manual, CH-LAB-0000)*	None - Must be identified and controlled at this step.	
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* *(Policy on Foreign Contamination CH-GMP-1000)*	Yes – Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	
Tote Bin	**B**	None	-	-			
	C	None	-	-			
	P	None	-	-			

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Packaging Mixer	**B**	None	-	-			
	C	Yes – Lubricant	L	L	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* Maintenance Procedures *(Non-Food Grade Lubricant CH-GMP-1040)* QA Lab Finished Product Analysis (*Dispositioner's Manual, CH-LAB-0000*)	None - Must be identified and controlled at this step.	
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* *(Policy on Foreign Contamination CH-GMP-1000)*	Yes – Packaging Magnet - Packaging Screen (74 Mesh, 250µ opening) – Sack Filling Magnet – Bag Metal Detector – Sack Metal Detector	
Packaging Magnet	**B**	None	-	-			
	C	None	-	-			
	P	No new potential foreign material introduction at this step. Identified as downstream elimination for potential foreign material.	-	-		Yes – Packaging Magnet – Bag Metal Detector	No – Similar elimination step further in process.
Packaging Screen	**B**	None	-	-			
	C	None	-	-			
	P	No new potential foreign material introduction at this step. Identified as downstream elimination for potential foreign material.	-	-		Yes – Packaging Screen (74 Mesh, 250µ opening) – Bag Metal Detector	No – Necessary to make viable product. Similar elimination step further in process (sack filling).

PROCESS HAZARD ANALYSIS

(1)	(2) – Introduction or Intensification				(3) – Control / Prevention	(4) – Downstream elimination or reduction to acceptable level	(5) - CCP
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Product Hopper	**B**	None	-	-	SAPP does not support microbial growth. (*conclusion of "Challenge Study of Ten Powders" performed by Silliker Laboratories, Research Report# RPN2413*)		
	C	None	-	-			
	P	None	-	-			
Bagging Machine	**B**	None	-	-			
	C	None	-	-			
	P	None	-	-			
Bag Metal Detector	**B**	None	-	-			
	C	None	-	-			
	P	No new potential foreign material introduction at this step. Identified as downstream elimination for potential foreign material.	-	-		Yes – Bag Metal Detector	Yes - CCP-1
Sack Filling Conveyor	**B**	None	-	-			
	C	Yes – Lubricant	L	L	GMP Procedures (*Good Manufacturing Practices CH-GMP-1000*)	None - Must be identified and controlled at this step.	

PROCESS HAZARD ANALYSIS

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					Maintenance Procedures *(Non-Food Grade Lubricant CH-GMP-1040)* QA Lab Finished Product Analysis *(Dispositioner's Manual, CH-LAB-0000)*		
	P	Yes – Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	L	M	GMP Procedures *(Good Manufacturing Practices CH-GMP-1000)* *(Policy on Foreign Contamination CH-GMP-1000)*	Yes – Sack Filling Magnet – Sack Metal Detector	
Sack Filling Magnet	**B**	None					
	C	None					
	P	No new potential foreign material introduction at this step. Identified as downstream elimination for potential foreign material.	-	-		Yes – Sack Filling Magnet	
Sack Metal Detector	**B**	None	-	-			
	C	None	-	-			
	P	No new potential foreign material introduction at this step. Identified as downstream elimination for potential foreign material.	-	-		Yes - Sack Metal Detector	Yes - CCP-2
Bulk Sack Filler	**B**	None	-	-			
	C	None	-	-			

PROCESS HAZARD ANALYSIS

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	P	None	-	-			

HACCP MASTER PLAN

(1) CCP	(2) Significant Hazard	(3) Critical Limits	(4) Monitoring	(5) Corrective Action(s)	(6) Verification / Validation	(7) Records
1	Metallic Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	Proper Detector Operation	What: Bagging Metal Detector How: Challenge the metal detector by verifying that a certified ferrous, non-ferrous and 316 stainless steel test spheres will be sensed and rejected. This testing is performed per Phos Mix Metal Detector Operation (*CH-PMX-1012)* Results are recorded on the Phos Mix Shift Check form(*CH-PMX-5002*) Frequency: Verification test to be performed at beginning of every packaging shift. Who: Phos Mix C Operator	1) Packaging is not resumed until metal detector is back in operation. 2) Operations submits a Process Deviation for the CCP failure. (*SOP: CH-A01-1002; Form: CH-A01-5005*) 3) Material since last good CCP check is placed on hold. 4) Review Board to determine the disposition. Material can be released if reprocessed through an equivalent CCP. Otherwise material must be dispositioned as non-salable.	1) Operations management reviews the Phos Mix Shift Check form. 2) Annual HACCP audit of CCP records. 3) Annual manufacturer certification of metal detector.	1) Phos Mix Shift Check form (*CH-PMX-5002*) 2) Process Deviation form (*CH-A01-5005*)

HACCP MASTER PLAN (CONTINUED)

(1) CCP	(2) Significant Hazard	(3) Critical Limits	(4) Monitoring	(5) Corrective Action(s)	(6) Verification / Validation	(7) Records
2	Metallic Foreign Contamination *(>7mm per FDA/ORA Compliance Policy Guide, Section 555.425)*	Proper Detector Operation	What: Sack Filling Metal Detector How: Challenge the metal detector by verifying that a certified ferrous, non-ferrous and 316 stainless steel test spheres will be sensed and rejected. This testing is performed per Phos Mix Metal Detector Operation (*CH-PMX-1012)* Results are recorded on the Phos Mix Sack Shift Check form(*CH-PMX-5006*) Frequency: Verification test to be performed at beginning of every packaging shift. Who: Phos Mix C Operator	1) Packaging is not resumed until metal detector is back in operation. 2) Operations submits a Process Deviation for the CCP failure. (*SOP: CH-A01-1002; Form: CH-A01-5005*) 3) Material since last good CCP check is placed on hold. 4) Review Board to determine the disposition. Material can be released if reprocessed through an equivalent CCP. Otherwise material must be dispositioned as non-salable.	1) Operations management reviews Phos Mix Sack Shift Check form. 2) Annual HACCP audit of CCP records. 3) Annual manufacturer certification of metal detector.	1) Phos Mix Sack Shift Check form (*CH-PMX-5006*) 2) Process Deviation form (*CH-A01-5005*)

HACCP PLAN APPROVAL

OPERATIONS MANAGER:	DATE:
HEALTH, SAFETY, & QUALITY MANAGER:	DATE:

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