FDA CORE NETWORK | COORDINATED OUTBREAK RESPONSE & EVALUATION

Canine Gastrointestinal Illness/Beneful® Dog Food (suspect)/ML/Jan 2013

Outbreak Investigation - EON-112939
Incident Summary FINAL Report
September 6, 2013

FDA CORE

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ABSTRACT

During 2012, the FDA Center for Veterinary Medicine (CVM) received approximately three (3) consumer complaints per month associated with Nestle Purina Beneful® dry dog food for a total of 31 consumer complaints (46 dogs, 8 deaths). In January 2013 alone, CVM received a surge of 26 consumer complaints between 1/8/13 and 1/21/13 that occurred after an open source media report implicated Beneful® dry dog food as a potentially harmful dog food product; the incident was subsequently transferred to CORE Response Team 3 (RT3). Prior to the transfer of this incident, CVM initiated sample collection assignments for microbial, mycotoxin and toxicological analyses related to six (6) consumer complaints that involved 8 dogs (1 death) in CA, IL, MA, NH, VA and NJ. Following the transfer, CVM closed the sample collection request for the NH complaint due to unavailable product, decreasing the focus of this investigation to five (5) consumer complaints that involved 7 dogs (1 death). Given the lack of a confirmed etiologic agent by the laboratory analyses and the increasing number of consumer complaints, CORE RT3 further analyzed all Beneful®-related consumer complaints received from March 2011 through February 2013, and initiated an investigation at three Nestle Purina manufacturing facilities. Laboratory analyses of samples collected during the field investigations revealed six violations regarding labeling for ethoxyquin, as well as elevated levels of two melamine analogs in six other samples. During the process of discussions with Nestle Purina Corporate Headquarters regarding the melamine analog issue, CORE and CVM agreed to close the response efforts for this incident, and returned the incident to CVM for any additional activities. CORE's involvement in this incident officially ended 5/14/13; at that time, there was not enough evidence to support Beneful® dry dog food as the source of the reported gastrointestinal illnesses.

SIGNAL AND SURVEILLANCE ACTIVITIES

FDA CVM experienced a surge of 26 consumer complaints (that involved 27 dogs and 6 deaths) related to Beneful® dog food with report dates that ranged from 1/8/13 to 1/21/13. During calendar year 2012, FDA CVM had received about 3 Beneful® complaints per month for a total of 31 consumer complaints (46 dogs, 8 deaths). The early 2013 surge occurred after an open source media report (examiner.com) on 1/11/13 implicated Beneful® as a potentially harmful dry dog food product (http://www.examiner.com/article/purina-s-beneful-dog-food-killing-dogs-nationwide-no-recall-issued-by-fda). The increase in the number of consumer complaints was evaluated by the CORE Signals and Surveillance Team (SST) and CVM on 1/23/13 and both determined that further sample collection and coordination was warranted. The incident was transferred to CORE RT3 on 1/29/13.

RESPONSE ACTIVITIES

EPIDEMIOLOGY

Between 1/1/13 to 2/28/13, CVM received a total 92 consumer complaints that involved a total of 111 ill dogs reported (to include 36 deaths) in association with the consumption of Beneful® pet food. CORE's response efforts began with a focus on a sample collection assignment issued by CVM (FACTS # 1491150) to five FDA District Offices (DO): Baltimore (BLT); Los Angeles (LOS); Chicago (CHI); New England (NWE); and New Jersey (NWJ). This sample collection pertained to 5 consumer complaints, involving 7 dogs (1 death), that originated from Virginia, Illinois, California, Massachusetts and New Jersey, respectively:

- The VA complainant (CC #130195) reported one dog (6 year old female Bichon-Cairn mix) that experienced daily vomiting and lethargy following consumption of Beneful® Healthy Weight and one beef rawhide chew purchased at a Wal-Mart store located in [redacted] VA on 12/1/12. The exposure dates ranged from 12/4/12 to 1/15/13; illness onset date was 12/23/12.

- The IL complainant (CC #130295) reported one dog (8 year old male Schnauzer) that experienced polydipsia, polyuria, diarrhea, anorexia, bruising, and hemoptysis after consuming Beneful® Healthy Fiesta. The product was purchased on 10/26/12at a Wal-Mart located in [redacted] IL. The dog received outpatient veterinary medical care and was provided a differential diagnosis of Addison's Disease. The exposure dates ranged from 11/1/12 to 12/11/12 with an illness onset date of 11/24/12; the pet was euthanized on [redacted].

- The CA complainant (CC #130220) reported two dogs (2 year old female Shih tzu and 2 year old Yorkie-Lhasa mix) that experienced immediate and daily vomiting after consumption of a 1:1 mixture of Beneful® Healthy Radiance and Natural Balance Potato & Duck Formula. The Beneful dog food was purchased at a Wal-Mart in [redacted] CA on 1/11/13. The exposure dates of the mixture ranged from 1/11/13 to 1/14/13; illness onset date was 1/11/13.

- The MA complainant (CC #130237) reported two dogs (3 year old and 11 month old Shiba Inus; both males) that experienced diarrhea and dehydration after consumption of Beneful® Original dog food. Both pets were seen for outpatient emergency veterinary medical care. The product was purchased on 1/11/13 from [redacted] MA. The exposure date range was 1/11/13 to 1/14/13; illness onset date was 1/12/13.

- The NJ complainant (CC #130389) reported one dog (6 year old male German Boxer) that experienced vomiting, lethargy, weight loss, polydipsia, diarrhea and anorexia after consumption of a mixture of Beneful® Healthy Radiance dry dog food and Alpo canned dog food. The pet food was purchased on 1/6/13 from [redacted] NJ. The exposure dates ranged from 1/8/13 to 1/22/13 with an illness onset date of 1/15/13.

Later in the investigation, RT3 was notified of a KY complaint (submitted on 4/7/13; EON-119500) that reported 4 young dogs (3 Yorkies and a 1 year old male Terrier mix) that experienced vomiting 2 hours after consumption of a new bag of Beneful® Healthy Weight dry dog food followed by lethargy (all dogs had been on that diet during the previous 2 months with no ill effects). All dogs were seen for outpatient veterinary care. Two dogs recovered however, one dog died on [redacted] and another on [redacted]. The product was purchased at a Wal-Mart in [redacted] KY on 3/20/13. There was a single exposure on 4/1/13 with illness onset reported as the same day.

LABORATORY

CVM-Initiated Consumer Complaint Sample Results

Prior to the transfer to CORE RT3, CVM requested the collection of finished product samples associated with the original 5 aforementioned consumer complaints for analysis to detect *Salmonella* spp., *E. coli* O157:H7, *Staphylococcus* enterotoxin (SET), *Bacillus* diarrheal enterotoxin

(BDE), *Bacillus* emetic toxin (BET), mycotoxins (aflatoxins and vomitoxin), and elements (i.e., sodium, calcium, potassium, iron, zinc, etc). FDA's Southeast Regional Laboratory (SRL) and Northeast Regional Laboratory (NRL) completed the analyses; however, the laboratories only completed analyses which were appropriate for the sample origin and quantity. No violations were detected in the 11 samples; the final laboratory results are as follows:

Table 1: CVM-initiated Sample Collection Assignment; Laboratory Results Summary

DO	FDA Lab	Sample Type, Beneful® dry dog food	Sample #	Collection Date	Completed Analyses	Results
BLT	SRL	Healthy Weight	**777210** – opened consumer	1/24/2013	*Salmonella* spp., *E. coli* O157:H7, *Bacillus* emetic toxin, mycotoxin	No violations
			777211 – closed retail	1/29/2013	*Salmonella* spp., *E. coli* O157:H7, *Bacillus* emetic toxin	No violations
			777212 – closed retail	1/29/2013	*Bacillus* emetic toxin, mycotoxin	No violations
LOS	NRL	Healthy Radiance	**738264** - closed retail	1/24/2013	*Salmonella* spp., *E. coli* O157:H7, *Staphylococcus* enterotoxin, *Bacillus* diarrheal enterotoxin, *Bacillus* emetic toxin, mycotoxins, elements	No violations
			754475 – closed retail	1/23/2013		No violations
CHI	NRL	Healthy Fiesta	**791196** – closed retail	1/28/2013	*Salmonella* spp., *E. coli* O157:H7, *Bacillus* emetic toxin	No violations
			791197 – closed retail		*Salmonella* spp., *E. coli* O157:H7, *Staphylococcus* enterotoxin, *Bacillus* diarrheal enterotoxin, mycotoxins, elements	No violations
NWE	NRL	Original	**702030** - closed retail	1/30/2013	*Salmonella* spp., *E. coli* O157:H7, *Staphylococcus* enterotoxin, *Bacillus* diarrheal enterotoxin, mycotoxins, elements	No violations
			702031 – opened consumer	1/29/2013	*Salmonella* spp., *Staphylococcus* enterotoxin, *Bacillus* diarrheal enterotoxin, mycotoxins	No violations
NWJ	NRL	Healthy Radiance	**760690** - opened consumer	2/4/2013	*Salmonella* spp., *E. coli* O157:H7, *Staphylococcus* enterotoxin, *Bacillus* diarrheal enterotoxin, *Bacillus* emetic toxin, mycotoxins, elements	No violations
			760691 – closed retail			No violations

NRL: Northeast Regional Laboratory
SRL: Southeast Regional Laboratory

CORE RT3-Initated Nestle Purina Investigation Sample Results

On 3/18/13, CORE RT3 issued to PHI-DO, LOS-DO, and DAL-DO an assignment (FACTS #1504446) to conduct a field investigation at Nestle Purina manufacturing facilities in PA, AZ, and OK, respectively. The objective was to obtain documentation on firm practices and to collect samples of the finished dry dog food for microbial, chemical (mycotoxin/vomitoxin) and pesticide analyses. Final laboratory analyses of ingredients and finished product samples collected during the field investigation revealed labeling violations for ethoxyquin, as well as elevated levels of two melamine analogs, cyanuric acid and ammelide.

Per 21 Code of Federal Regulations (CFR) 573.380 (http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?fr=573.380), ethoxyquin may be used in animal feeds as a preservative under the condition that quantities not exceed 150 ppm, and the additive is clearly indicated on product labeling. Six (6) samples collected by PHI-DO contained allowable levels of ethoxyquin; however, the additive was not indicated on the product labeling. In addition, 6 samples collected by DAL-DO (4) and LOS-DO (2) were also above the allowable level of 2.5 ppm for cyanuric acid and ammelide. Sample #376190 was below the 2.5 ppm level for both melamine analogs and considered Class 2 – no regulatory action required. CVM subject matter experts (SME) felt the melamine analog levels were not high enough to elicit a health threat; however, the levels were significant enough to warrant the firm's attention. The final laboratory results of the 23 samples are as follows:

Table 2: Nestle Purina Investigation Assignment; Laboratory Results Summary

DO	FDA Lab	Sample #	Sample Type, ingredient or Beneful® dry dog food variety	*Salmonella; E. coli* O157:H7; *Staphylococcus* /SET; *Bacillus* diarrheal enterotoxin (BDE); *Bacillus* emetic toxin (BET)	Aflatoxin/ Vomitoxin (Chem)	Pesticides	GC/MS Contaminants Melamine
PHI	NRL	775888	Ground yellow corn	Not analyzed	No violations	Not analyzed	Not analyzed
PHI	NRL	775889	Healthy Radiance	No violations (no BET analysis)	No violations	**Ethoxyquin label violation**	Not analyzed
PHI	NRL	775890	Playful Life	No violations (no BET analysis)	No violations	**Ethoxyquin label violation**	Not analyzed
PHI	NRL	775891	Healthy Growth for Puppies	No violations (no BET analysis)	No violations	**Ethoxyquin label violation**	Not analyzed
PHI	NRL	775892	Healthy Weight	No violations (no BET analysis)	No violations	**Ethoxyquin label violation**	Not analyzed
PHI	NRL	803349	Original	No violations (no BET analysis)	No violations	**Ethoxyquin label violation**	Not analyzed
PHI	NRL	803350	Healthy Fiesta	No violations (no BET analysis)	No violations	**Ethoxyquin label violation**	Not analyzed
DAL	KAN	803076	Ground corn	Not analyzed	No violations	No violations	No violations
DAL	KAN	803075	Raw whole kernel corn	Not analyzed	No violations	No violations	No violations

DAL	ARL	803082 Micro & Tox	Original	No violations (no BET analysis)	No violations	No violations	
	KAN	**803077** Chem					**Cyanuric acid and ammelide;** **Class 3**
DAL	ARL	803081 Micro & Tox	Original	No violations (no BET analysis)	No violations	No violations	**Cyanuric acid and ammelide;** **Class 3**
	KAN	**803078** Chem					
DAL	ARL	803083 Micro & Tox	Healthy Weight	No violations (no BET analysis)	No violations	No violations	**Cyanuric acid and ammelide;** **Class 3**
	KAN	**803079** Chem					
DAL	ARL	803080 Micro & Tox	Healthy Radiance	No violations (no BET analysis)	No violations	No violations	**Cyanuric acid and ammelide;** **Class 3**
	KAN	**803084** Chem					
LOS	PRL-SW	376187 Micro & Tox	Playful Life	No violations	No violations	No violations	**Cyanuric acid and ammelide;** **Class 3**
	KAN	**376188** Chem					
LOS	PRL-SW	376189 Micro & Tox	Healthy Radiance	No violations	No violations	No violations	Cyanuric acid and ammelide; Class 2
	KAN	**376190** Chem					
LOS	PRL-SW	376191 Micro & Tox	Original	No violations	No violations	No violations	**Cyanuric acid and ammelide;** **Class 3**
	KAN	**376192** Chem					

GC/LC: Gas chromatography / Liquid chromatography
ARL: Arkansas Regional Laboratory
KAN: KAN-DO Laboratory
NRL: Northeast Regional Laboratory
PRL-SW: Pacific Regional Laboratory - Southwest

Table 3: Melamine Analogs; Laboratory Results Summary

Sample #	Run	Melamine	Cyanuric Acid (ppm)	Ammelide (ppm)	Total (ppm)	Class
803077	Original Run	0	1.65	6.54	8.19	**3**
	Check Run		1.13	5.63	6.76	
376188	Original Run	0	1.04	2.58	3.62	**3**
	Check Run	0	0.73	1.77	2.5	
803079	Original Run	0	0.97	2.85	3.82	**3**
	Check Run	0	0.74	1.98	2.72	
803078	Original Run	0	1.16	2.53	3.69	**3**
	Check Run	0	0.76	2.07	2.83	
376192	Original Run	0	0.83	1.83	2.66	**3**
	Check Run	0	0.72	1.92	2.64	
376190	Original Run	0	1.03	1.48	2.51	**2**
	Check Run	0	0.71	1.55	2.26	
803084	Original Run	0	0.88	1.82	2.7	**3**
	Check Run	0	0.93	3.54	4.47	

Reporting limit for this method using GC / MS is 2.5 ppm (parts per million)

CVM Office of Research Acetaminophen Analysis Results:

CVM Veterinary Laboratory Investigation and Response Network (Vet-LIRN) reported the dog from KY that died on [redacted] received a post-mortem examination (necropsy) at the University of Kentucky Diagnostic Laboratory that revealed acetaminophen in the urine. CVM Vet-LIRN conducted the analysis of the dog food sample. During an Incident Coordination Planning (ICP) meeting on 5/8/13, CVM Vet-LIRN conveyed that laboratory analysis revealed positive markers for acetaminophen in the animal's tissue; however, the dog food product collected from the complainant tested negative for acetaminophen. This laboratory sample was not included as an official sample in this investigation, as the method of analysis to detect acetaminophen in dry dog food was not validated.

TRACEBACK

No traceback activity was conducted during this investigation.

ESTABLISHMENT INSPECTIONS & INVESTIGATIONS

Data Analysis

Considering the increasing number of consumer complaints received in January and February 2013, and the lack of further hypotheses generated by the laboratory results, CORE RT3 requested CVM's entire Access database of consumer complaints related to Beneful® dry dog food. CORE RT3 received and evaluated these consumer complaints which contained reported dates between March 2011 and February 2013. The data were sorted and evaluated according to clinical signs, organ system affected, flavor variety consumed, adverse event date, and district of complaint. This analysis revealed a total of 133 clinically significant complaints with adverse event (illness onset) dates that ranged from May 2006 to February 2013 with no compelling trends leading to further hypotheses.

Therefore, RT3 examined the consumer complaints with available plant code information, focusing on the originating FDA districts with the largest number of consumer complaints with adverse events that occurred between May 2006 and Feb 2013. This evaluation revealed 43 of 133 clinically significant consumer complaints (see middle column **Table 4**). RT3 then

narrowed the focus to the known FDA districts with the largest number of consumer complaints with adverse events that occurred between January and February 2013. This revealed 16 of 92 clinically significant consumer complaints with the greatest number originating from PHI-DO (4), LOS-DO (3), NYK-DO (3), and DAL-DO (3). RT3 decided to initiate investigations at three Nestle Purina manufacturing facilities based upon a triangular geographical approach. Because of the close proximity of NYK-DO and PHI-DO and given that PHI-DO had received the largest number of consumer complaints between January and February 2013, CORE decided to plan investigations at Beneful® manufacturing facilities with locations in PHI-DO, LOS-DO and DAL-DO only (see **Table 4**).

Table 4: CVM consumer complaint database evaluation; Beneful® dry dog food

FDA District Office	# CCs with Adverse Events that occurred between May 2006 and Feb 2013	# CC with Adverse Events that occurred in Jan and Feb 2013
PHI	18	4
LOS	5	3
KAN	5	2
NYK	5	3
DAL	5	3
DEN	2	1
ATL	3	0
Totals	**43**	**16**

CC: consumer complaint

Establishment Investigations

CORE RT3 issued an assignment (FACTS #1504446) on 3/21/13 to PHI-DO, DAL-DO and LOS-DO to conduct an investigation at the Nestle Purina Pet Care manufacturing facilities in Mechanicsburg, PA; Edmond, OK; and Flagstaff, AZ respectively. The purpose of the assignment was to obtain documentation regarding the product ingredients; collect finished product records; collect samples of the finished products for microbial, chemical (mycotoxin/vomitoxin) and pesticide analyses; assess production practices; and evaluate the firm's protocols to address consumer complaints.

DAL-DO

On 3/25/13 DAL-DO began the investigation at the Nestle Purina Pet Care dry dog food manufacturing facility, 13900 N. Lincoln Blvd., Edmond, OK (FEI #1620835). The investigator completed the assignment with the exception of two refusals. The firm did not allow photographs during the inspection (corporate policy), and refused to sign two 463 affidavits: one regarding the receipt, testing of corn and use of ground corn as an ingredient; and another regarding the manufacture and distribution of Beneful® dog food products and documentation of FDA's collection of dog food samples on 3/26/13. The investigator successfully collected and shipped samples of whole kernel corn, ground corn, and the finished Beneful dog food products (Original and Healthy Weight) for analyses. The investigator found no objectionable conditions or practices (classified as No Action Indication [NAI]; no 483 was issued), and closed the investigation on 3/28/13.

PHI-DO

PHI-DO began the investigation at Nestle Purina Pet Care, 6509 Brandy Lane, Mechanicsburg, PA (FEI #2527354) on 3/26/13. In addition to completing the assignment objectives, the investigator also conducted a Bovine Spongiform Encephalopathy (BSE) inspection. The investigation revealed the following formulation changes: addition of [redacted] and choline chloride to Beneful® Healthy Growth, IncrediBites, and Playful Life, effective as early as 11/26/12. In addition, [redacted] was replaced with [redacted] in Beneful® Original, Puppy, Healthy Fiesta, IncrediBites and Playful Life, effective as early as 3/19/13. Per a refusal from Nestle Purina Corporate Headquarters, the manufacturing facility was unable to provide the actual content or weights of individual ingredients that went into each batch of the implicated lots associated with previously reported consumer complaints. The investigator successfully collected and shipped samples of ground yellow corn and the finished Beneful® dog food products (Healthy Radiance, Playful Life, Healthy Growth for Puppies, Healthy Weight, Original, Healthy Fiesta) for laboratory analysis. The investigator found no objectionable observations (classified as NAI; no 483 was issued), and closed the investigation on 3/29/13.

LOS-DO

On 3/26/13, LOS-DO began an investigation at the Nestle Purina Pet Care manufacturing facility, 4700 E. Nestle Purina Avenue, Flagstaff, AZ (FEI #2018966). The investigator completed the assignment objectives with the exception of one refusal. The firm allowed the investigator to review all records, but did not allow him to obtain copies of the records. The investigator collected and shipped samples of finished Beneful® Playful Life, Healthy Radiance, and Original for laboratory analysis. The investigator found no objectionable observations (classified as NAI; no 483 was issued), and closed the investigation on 3/28/13.

All laboratory results from the 3 inspections are included in **Table 2** on pages 5-6.

REGULATORY ACTIONS

CVM elected not to pursue regulatory actions during this incident. CVM decided to provide educational outreach to Nestle Purina Corporate Headquarters regarding the labeling violation for ethoxyquin; RT3 was not involved in this outreach. At the close of CORE's response efforts, CVM and Nestle Purina Corporate Headquarters were in discussion regarding the validation of

the FDA laboratory results for the elevated melamine analogs; however, CVM had not yet pursued a Class 3 voluntary recall as planned.

COMMUNICATIONS

FDA did not provide any public communication during this incident.

External Media Coverage:

- 1/08/2013 – Dog owners blame Beneful for their pets' illness: Consumer Affairs.com
- 1/11/2013 – Is Purina's Beneful dog food killing dogs nationwide; No recall issued by FDA: Examiner.com
- 1/18/2013 – Are the Complaints About Beneful Pet Food Valid: Newtown's HamletHub.com
- 2/13/2013 – Happy dog's tale ends sadly: phillyBurbs.com

RECOMMENDATIONS

As decided by CORE Management, no recommendations were forwarded to Post Response.

POST RESPONSE ACTIVITIES

This incident was transferred to CORE Post Response (PR) on 6/5/13; Tracy DuVernoy was the assigned Lead for all subsequent PR efforts. No CORE PR activities were warranted other than finalizing all documents associated with this incident. This incident will be added as an 'incident of interest' to the Outbreak Database due to the inability to associate the reported canine gastrointestinal illnesses to Beneful® dry dog food. This incident was officially closed by PR on 9/6/13.

CONCLUSION

Prior to the completion of discussions with Nestle Purina Corporate Headquarters, CORE and CVM Management decided on 5/8/13 that all remaining duties regarding this incident will be managed by CVM alone. CORE Management notified CORE RT3 of the decision to immediately discontinue all response efforts for this incident and to transfer the incident to CVM. CORE RT3 provided formal notification to all stakeholders on 5/14/13 to indicate the closure of the response efforts and directed all further communications regarding this incident to CVM. All official communications regarding the CORE RT3 response efforts including laboratory results and regulatory decisions also ended on 5/14/13; at that time, it was uncertain if Beneful® dry dog food was the source of the reported canine gastrointestinal illnesses.

ACKNOWLEDGEMENTS

CORE would like to acknowledge FDA BLT-DO, PHI-DO and LOS-DO for their thorough investigations and KAN-DO for coordinating discussions with Nestle Purina Corporate Headquarters, Checkerboard Square, St. Louis, MO.

SUPPORTING DOCUMENTS

See File Attachments section in EON-112939.