

Dairy National Chemical Contaminants Programme

2007/08

The dairy National Chemical Contaminants Programme provides an assurance that not less than 99% of raw milk conforms to New Zealand and international requirements at the farm gate.

We Looked For:

- 253 compounds or elements including:
 - Antibiotics and other veterinary medicines
 - Pesticides
 - Herbicides
 - Fungicides
 - Compounds withdrawn or not permitted for food producing animals
 - Aflatoxins
 - Chemical elements
- All sampling was on the basis of the raw milk or colostrum at the farm gate prior to any dilution, with the exception of 28 colostrum samples taken from the tanker at delivery to the factory.

We Tested:

- 7 random raw milk rounds (312 samples) spanning the full production season, and 2 targeted colostrum rounds (60 samples).
- Over 90,000 individual results.

What we found:

Of the 90,020 individual test results there were 157 detections (0.17%), all of which were below any applicable tolerance limits. The detections of most interest were:

- semicarbazide in raw milk at a trace level below 0.001mg/kg. Semicarbazide is of interest as it is a metabolite of nitrofurazone, though it is not an exclusive marker and as such can only be used for screening purposes to prompt further investigation.

There is no registered or allowable use for nitrofurazone to treat milking animals. However investigations did not indicate any exposure to nitrofurazone. Further information on the limitations of semicarbazide within residue monitoring programmes is the subject of a report available on the NZFSA website.

- Diphenylamine in one individual farm colostrum supply at a low level (less than 0.01mg/kg). The likely source being new rubberware at the farm dairy.
- Selenium detected in two farm colostrum supplies. This was the first time that selenium had been detected in either milk or colostrum and, although no tolerance limits were exceeded, selenium will continue to be monitored.

Of note, a survey of 50 raw milk samples was undertaken looking for residues of six ionophores, namely Narasin, Lasalocid, Monensin, Salinomycin, Semduramycin, & Maduramycin. No detectable residues were found in any of the samples tested.

Because the sampling occurs at the farm prior to consolidation these results give a very high level of confidence that New Zealand dairy products meet the required international limits for chemical residues and contaminants. The small increase in the number of detections is a reflection of improved sensitivity in the test methods used.

Whenever a test result indicates a level that might exceed that permitted by any overseas market an investigation is undertaken to confirm that the dairy products manufactured are conform in all respects to the requirements of the intended market(s).

Table 1: Summary of NCCP results for the period 1 July 2007 to 30 June 2008

Group of Substances	Compounds	Raw Milk 2007/2008				Raw Colostrum 2007/2008			
		Samples ¹	Not Detected	Detected ² below MRL	Non-conforming ³	Samples ¹	Not Detected	Detected ² below MRL	Non-conforming ³
Group A(6)									
	Chloramphenicol	312	312	0	0	60	60	0	0
	Dapsone	312	312	0	0	60	60	0	0
	SEM (Nitrofurazone derivative)	312	311	1	0	60	60	0	0
	AOZ (Furazolidone derivative)	312	312	0	0	60	60	0	0
	AMOZ (Furaltadone derivative)	312	312	0	0	60	60	0	0
	ADH (nitrofurantoin derivative)	312	312	0	0	60	60	0	0
Group B(1)									
Penicillins	Benzyl penicillin	312	311	1	0	60	55	5	0
	Ampicillin	312	312	0	0	60	59	1	0
	Amoxicillin	312	312	0	0	60	60	0	0
	Cloxacillin	312	311	1	0	60	59	1	0
	Dicloxacillin	312	312	0	0	60	60	0	0
	Nafcillin	312	312	0	0	60	60	0	0
	Oxacillin	312	312	0	0	60	60	0	0
Cephalospori	Cefuroxime	312	312	0	0	60	60	0	0

	Cephaperazone	312	312	0	0	60	60	0	0
	Cephapirin	312	310	2	0	60	60	0	0
	Cephazolin	312	312	0	0	60	60	0	0
Aminoglycosides	Streptomycin	312	312	0	0	60	60	0	0
	Dihydro-streptomycin	312	312	0	0	60	60	0	0
	Gentamycin	312	312	0	0	60	60	0	0
	Neomycin	312	312	0	0	60	60	0	0
	Framycetin	312	312	0	0	60	60	0	0
Macrolides	Tylosin	312	312	0	0	60	60	0	0
	Erythromycin	312	312	0	0	60	60	0	0
	Oleandomycin	312	312	0	0	60	60	0	0
	Lincomycin	312	312	0	0	60	60	0	0
	Pirlimycin	312	312	0	0	60	60	0	0
	Spiramycin	312	312	0	0	60	60	0	0
	Tilmicosin	312	312	0	0	60	60	0	0
Sulphonamides	Sulfadiazine	312	312	0	0	60	60	0	0
	Sulfacetamide	312	312	0	0	60	60	0	0
	Sulfadimethoxine	312	312	0	0	60	60	0	0
	Sulfamerazine	312	312	0	0	60	60	0	0
	Sulfamethazine (Sulpfadimadine)	312	312	0	0	60	60	0	0
	Sulfamethoxazole	312	312	0	0	60	60	0	0
	Sulfathiazol	312	312	0	0	60	60	0	0
	Sulfonamide group	312	312	0	0	60	60	0	0
Tetracyclines	Tetracycline	312	312	0	0	60	60	0	0

Dairy National Chemical Contaminants Programme 2007/08

	Oxytetracycline	312	312	0	0	60	60	0	0
	Chlortetracycline	312	312	0	0	60	60	0	0
	Doxycycline	312	312	0	0	60	60	0	0
	Sum of Tetracyclines	312	312	0	0	60	60	0	0
Diamino pyrimidine derivatives	Trimethoprim	312	312	0	0	60	60	0	0
	Baquiloprim	312	312	0	0	60	60	0	0
Group B(2)(a)									
Benzimidazoles	Fenbendazole	312	312	0	0	60	60	0	0
	Oxfendazole	312	312	0	0	60	60	0	0
	Albendazole	312	312	0	0	60	60	0	0
	Ricobendazole	312	312	0	0	60	60	0	0
Tetra-hydro-imidazoles	Levamisole	312	312	0	0	60	60	0	0
Milbemycins	Moxidectin	111	109	2	0	32	32	0	0
	Eprinomectin	111	110	1	0	32	32	0	0
	Ivermectin	111	111	0	0	32	32	0	0
	Doramectin	111	111	0	0	32	32	0	0
	Emamectin	111	111	0	0	32	32	0	0
	Abamectin	111	110	1	0	32	31	1	0
Group B(2)(c)									
Synthetic pyrethroids	Permethrin	312	312	0	0	60	60	0	0
	Bioresmethrin	312	312	0	0	60	60	0	0

Dairy National Chemical Contaminants Programme 2007/08

		Cyhalothrin	312	312	0	0	60	60	0	0
		Cyfluthrin	312	312	0	0	60	60	0	0
		Cypermethrin	312	312	0	0	60	60	0	0
		Deltamethrin	312	312	0	0	60	60	0	0
		Flumethrin	312	312	0	0	60	60	0	0
		Fenvalerate	312	311	1	0	60	60	0	0
		Bifenthrin	312	312	0	0	60	60	0	0
		Dichlofenthion	312	312	0	0	60	60	0	0
		Fenpropathrin	312	312	0	0	60	60	0	0
		Piperonal butoxide	312	303	9	0	60	60	0	0
	Carbamates	Bendiocarb	312	312	0	0	60	60	0	0
		Carbaryl	312	312	0	0	60	60	0	0
		Carbofuran	312	312	0	0	60	60	0	0
		Chlorpropham	312	312	0	0	60	60	0	0
		Fenoxycarb	312	312	0	0	60	60	0	0
		Furathiocarb	312	312	0	0	60	60	0	0
		Methiocarb	312	312	0	0	60	60	0	0
		Pirimicarb	312	312	0	0	60	60	0	0
		Propham	312	312	0	0	60	60	0	0
		Propoxur	312	312	0	0	60	60	0	0
	Group B(2)(e)									
	Non-steroidal anti-inflammatory drugs (NSAIDS)	Phenylbutazone	161	161	0	0	60	60	0	0
		Flunixin	161	161	0	0	60	60	0	0
		Ketoprofen	161	161	0	0	60	60	0	0

Group B(2)(f)									
Other	Dexamethasone	62	62	0	0	32	32	0	0
Group B(3)(a)									
Organochlorines	Aldrin	312	312	0	0	60	60	0	0
	Atrazine	312	312	0	0	60	60	0	0
	Dieldrin	312	312	0	0	60	60	0	0
	DDD op	312	312	0	0	60	60	0	0
	DDD pp	312	311	1	0	60	60	0	0
	DDE op	312	312	0	0	60	60	0	0
	DDE pp	312	239	73	0	60	36	24	0
	DDT op	312	312	0	0	60	60	0	0
	DDT pp	312	311	1	0	60	60	0	0
	sum of DDT, DDD & DDE	312	239	73	0	60	60	0	0
	Hexachlorobenzene	312	312	0	0	60	60	0	0
	BHC, alpha isomer	312	312	0	0	60	60	0	0
	BHC, beta isomer	312	312	0	0	60	60	0	0
	BHC, gamma isomer (lindane)	312	312	0	0	60	60	0	0
	Chlordane cis	312	312	0	0	60	60	0	0
	Chlordane trans	312	312	0	0	60	60	0	0
	Dicofol	312	312	0	0	60	60	0	0
	Endosulfan sulphate	312	312	0	0	60	60	0	0
	Endosulphane I	312	312	0	0	60	60	0	0

Dairy National Chemical Contaminants Programme 2007/08

	Endosulphane II	312	312	0	0	60	60	0	0
	Endrin	312	312	0	0	60	60	0	0
	Heptachlor	312	312	0	0	60	60	0	0
	Heptachlor epoxide	312	312	0	0	60	60	0	0
Group B(3)(b)									
Organophosphates	Chlorpyriphos (ethyl)	312	312	0	0	60	60	0	0
	Chlorpyriphos (methyl)	312	312	0	0	60	60	0	0
	Coumaphos	312	312	0	0	60	60	0	0
	Diazinon	312	312	0	0	60	60	0	0
	Famphur	312	312	0	0	60	60	0	0
	Fenthion	312	312	0	0	60	60	0	0
	Phorate	312	312	0	0	60	60	0	0
	Phosmet	312	312	0	0	60	60	0	0
	Pirimiphos-methyl	312	312	0	0	60	60	0	0
	Propetamphos	312	312	0	0	60	60	0	0
	Temephos	312	311	1	0	60	59	1	0
	Terbufos	312	312	0	0	60	60	0	0
	Dichlorvos	312	312	0	0	60	60	0	0
	Bromophos ethyl	312	312	0	0	60	60	0	0
	Bromophos methyl	312	312	0	0	60	60	0	0
	Chlorfenvinphos	312	312	0	0	60	60	0	0
	Dimethoate	312	312	0	0	60	60	0	0
	EPN	312	312	0	0	60	60	0	0

Dairy National Chemical Contaminants Programme 2007/08

	Ethion	312	312	0	0	60	60	0	0
	Etrimfos	312	312	0	0	60	60	0	0
	Fenchlorophos	312	312	0	0	60	60	0	0
	Fenitrothion	312	312	0	0	60	60	0	0
	Fensulfothion	312	312	0	0	60	60	0	0
	Heptenophos	312	312	0	0	60	60	0	0
	Iodofenphos	312	312	0	0	60	60	0	0
	Isazophos	312	312	0	0	60	60	0	0
	Isofenphos	312	312	0	0	60	60	0	0
	Malathion	312	312	0	0	60	60	0	0
	Methacrifos	312	312	0	0	60	60	0	0
	Methidithion	312	312	0	0	60	60	0	0
	Mevinphos	312	312	0	0	60	60	0	0
	Parathion	312	312	0	0	60	60	0	0
	Parathion-methyl	312	312	0	0	60	60	0	0
	Phosalone	312	312	0	0	60	60	0	0
	Phosphamidon	312	312	0	0	60	60	0	0
	Prothiophos	312	312	0	0	60	60	0	0
	Pyrazophos	312	312	0	0	60	60	0	0
	Tetrachlorvinphos	312	312	0	0	60	60	0	0
	Tolclofos-methyl	312	312	0	0	60	60	0	0
	Triazophos	312	312	0	0	60	60	0	0
Acaricides	Bromopropoxylate	312	312	0	0	60	60	0	0
	Chlorobenzilate	312	312	0	0	60	60	0	0
	Propargite	312	312	0	0	60	60	0	0
	Tebufenpyrad	312	312	0	0	60	60	0	0
	Tetradifon	312	312	0	0	60	60	0	0
	Buprofezin	312	312	0	0	60	60	0	0

Dairy National Chemical Contaminants Programme 2007/08

	Tebufenpyrad	312	312	0	0	60	60	0	0
	Tetradifon	312	312	0	0	60	60	0	0
	Buprofezin	312	312	0	0	60	60	0	0
	Cholinesterase sensitive Organophosphates	312	312	0	0	60	60	0	0
Fungicides	Azaconazole	312	312	0	0	60	60	0	0
	Benalaxyl	312	312	0	0	60	60	0	0
	Bitertanol	312	312	0	0	60	60	0	0
	Bupirimate	312	312	0	0	60	60	0	0
	Captan	312	312	0	0	60	60	0	0
	Chlorothalonil	312	312	0	0	60	60	0	0
	Chlozolate	312	312	0	0	60	60	0	0
	Cyproconazole	312	312	0	0	60	60	0	0
	Cyprodinil	312	312	0	0	60	60	0	0
	Dicloran	312	312	0	0	60	60	0	0
	Difenoconazole	312	312	0	0	60	60	0	0
	Dimethomorph	312	312	0	0	60	60	0	0
	Diphenylamine	312	312	0	0	60	59	1	0
	Etridiazole	312	312	0	0	60	60	0	0
	Fenarimol	312	312	0	0	60	60	0	0
	Fenpiclonil	312	312	0	0	60	60	0	0
	Fenpropomorph	312	312	0	0	60	60	0	0
	Fludioxonil	312	312	0	0	60	60	0	0

	Flusilazole	312	312	0	0	60	60	0	0
	Flutriafol	312	312	0	0	60	60	0	0
	Folpet	312	312	0	0	60	60	0	0
	Furalaxyl	312	312	0	0	60	60	0	0
	Hexaconazole	312	312	0	0	60	60	0	0
	Iprodione	312	312	0	0	60	60	0	0
	Metalaxyl	312	312	0	0	60	60	0	0
	Nitrothal isopropyl	312	312	0	0	60	60	0	0
	Oxadixyl	312	312	0	0	60	60	0	0
	Penconazole	312	312	0	0	60	60	0	0
	Pencycuron	312	312	0	0	60	60	0	0
	Prochloraz	312	312	0	0	60	60	0	0
	Procymidone	312	312	0	0	60	60	0	0
	Propiconazole	312	312	0	0	60	60	0	0
	Pyrimethanil	312	312	0	0	60	60	0	0
	Quintozene	312	312	0	0	60	60	0	0
	Tebuconazole	312	312	0	0	60	60	0	0
	Tolyfluanid	312	312	0	0	60	60	0	0
	Triadimefon	312	312	0	0	60	60	0	0
	Triadimenol	312	312	0	0	60	60	0	0
	Vinclozolin	312	312	0	0	60	60	0	0
Herbicides	Acetochlor	312	312	0	0	60	60	0	0
	Alachlor	312	312	0	0	60	60	0	0
	Chlornitrofen	312	312	0	0	60	60	0	0
	Chlorthal-dimethyl	312	312	0	0	60	60	0	0

Dairy National Chemical Contaminants Programme 2007/08

Clomazone	312	312	0	0	60	60	0	0
Cyanazine	312	312	0	0	60	60	0	0
Diflufenican	312	312	0	0	60	60	0	0
Dimethanamid	312	312	0	0	60	60	0	0
Diphenamid	312	312	0	0	60	60	0	0
EPTC	312	312	0	0	60	60	0	0
Flamprop-methyl	312	312	0	0	60	60	0	0
Fluazifop-p-butyl	312	312	0	0	60	60	0	0
Fluometuron	312	312	0	0	60	60	0	0
Haloxifop-methyl	312	312	0	0	60	60	0	0
Hexazinone	312	312	0	0	60	60	0	0
Isoproturon	312	312	0	0	60	60	0	0
Linuron	312	312	0	0	60	60	0	0
Metolachlor	312	312	0	0	60	60	0	0
Metribuzin	312	312	0	0	60	60	0	0
Napropamide	312	312	0	0	60	60	0	0
Norfluorazon	312	312	0	0	60	60	0	0
Oxadiazon	312	312	0	0	60	60	0	0
Oxyfluorfen	312	312	0	0	60	60	0	0
Pendimethalin	312	312	0	0	60	60	0	0
Prometryn	312	312	0	0	60	60	0	0
Propachlor	312	312	0	0	60	60	0	0
Propazine	312	312	0	0	60	60	0	0
Propyzamide	312	312	0	0	60	60	0	0
Quizaolofop-ethyl	312	312	0	0	60	60	0	0

Dairy National Chemical Contaminants Programme 2007/08

Other Pesticides	Simazine	312	312	0	0	60	60	0	0
	Terbacil	312	312	0	0	60	60	0	0
	Terbutylazine	312	312	0	0	60	60	0	0
	Terbutym	312	312	0	0	60	60	0	0
	Trialkoxydim	312	312	0	0	60	60	0	0
	Triallate	312	312	0	0	60	60	0	0
	Benodanil	312	312	0	0	60	60	0	0
	Binapacryl	312	312	0	0	60	60	0	0
	Chlorfluazuron	312	312	0	0	60	60	0	0
	Epoxyconazole	312	312	0	0	60	60	0	0
	Inoxacarb	312	312	0	0	60	60	0	0
	Kresoxim-methyl	312	312	0	0	60	60	0	0
	Nitrofen	312	312	0	0	60	60	0	0
	Paclobutrazol	312	312	0	0	60	60	0	0
	Pyriproxifen	312	312	0	0	60	60	0	0
Trifloxystrobin	312	312	0	0	60	60	0	0	
Group B(3)(c)									
Chemical elements	Arsenic	211	211	0	0	32	32	0	0
	Boron	211	211	0	0	32	31	1	0
	Cadmium	211	211	0	0	32	32	0	0
	Lead	211	211	0	0	32	31	1	0
	Mercury	211	211	0	0	32	32	0	0
	Selenium	211	211	0	0	32	30	2	0

Group 3(d)									
Mycotoxins	Aflatoxin M ₁	312	302	10	0	60	59	1	0
Ionophore Survey									
	Narasin	50	50	0	0	0	0	0	0
	Lasalocid	50	50	0	0	0	0	0	0
	Monensin	50	50	0	0	0	0	0	0
	Salinomycin	50	50	0	0	0	0	0	0
	Semduramycin	50	50	0	0	0	0	0	0
	Maduramycin	50	50	0	0	0	0	0	0
Total analyses⁴		75,996	75,891 99.86%	105 0.14%	0 0.00%	14,024	13,972 99.62%	52 0.38%	0 0.00%

Notes:

1. Samples: total number of individual batches sampled in the period covered
 2. Detections: number of detections at or below the MRL. In some cases no limit applies.
 3. Non-conforming results: detection of a compound above the New Zealand MRL maximum limit for a residue or contaminant, or detection at or above the limit of quantitation of a compound not permitted for food producing animals.
 4. Number analyses: total number of analyses completed in the period covered (i.e. samples x tests).
- * One or more of the farm gate results may have exceeded an importing country limit, but the product manufactured met the market requirement.