

Pesticides: Hidden Ingredients in Chinese Tea

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Tea drinking is one of China's most cherished customs; and tea a symbol of Chinese culture. Today, China is the world's biggest tea producer, with 20 tea-producing provinces and eight million tea growers. And the area of tea plantations and annual tea output in the country is on a continuous rise. However, the latest Greenpeace investigation has discovered that the massive use of chemical pesticides is seriously affecting the safety of tea in the Chinese market.

In December 2011 and January 2012 Greenpeace took samples from nine well-known tea companies including China Tea Company Limited (referred to below as China Tea), Tenfu's Tea, Beijing Wuyutai Tea Company Limited, (referred to below as Wuyutai), Zhang Yiyuan Tea Company Limited, (referred to below as Zhang Yiyuan) and Richun Joint-stock Company (referred to below as Richun) (see Annex 1). Greenpeace purchased at random 18 different kinds of medium-grade tea, all popular with consumers. The samples were sent to an accredited third-party laboratory for pesticide testing. The price of these tea samples ranged from RMB120 to RMB2,000 per kilogram; varieties tested were green tea, oolong tea and jasmine tea. The results showed that every one of the 18 samples from the nine tea manufacturers contained at

least three different kinds of pesticides; 12 of the samples showed traces of the banned pesticides methomyl, endosulphan, and fenvalerate; 14 samples contained carbendazim, benomyl, myclobutanil, flusilazole or other pesticides that according to the EU’s classification may impair fertility, cause harm to an unborn child, or cause heritable genetic damage (see Annex 2). Detailed results are as follows:

(1) All of the tea samples contained a variety of pesticides

The results showed that all 18 tea samples contained a mixture of at least three different kinds of pesticides. In total, as many as 29 different pesticides were detected. Six of the samples contained more than 10 different kinds of pesticides. As many as 17 different kinds of pesticides were found on Richun’s Tieguanyin 803 tea.

Table 1: Number of different kinds of pesticides found on the samples

Type of tea	No. of pesticides	Price (RMB per kg)
Richun 803 Tieguanyin Tea	17	600
Richun 802 Tieguanyin Tea	15	400
Eight Horses Qiangxin Tianhan Tieguanyin Tea	14	880
Richun 805 Tieguanyin Tea	13	1000
Eight Horses Jasmine Tea	11	1000
Tenfu’s Famous Bi Luo Chun Tea	11	1280

Zhu Ye Qing Best Quality Tea	8	1000
Zhu Ye Qing Tea	8	1644
Zhuang Yiyuan Jasmine Cloud Tea	8	270
Zhang Yiyuan Lion Peak Dragon Well Tea	5	640
Wuyutai Jasmine Zhenluo Tea	5	520
China Tea King Dragon Well Tea	5	2000
China Tea Jasmine Tea	5	120
China Tea King Guapian tea	5	1600
Hainan State Farms Baisha Green Tea	4	~1866
China Tea West Lake Dragon Well Tea	4	660
Tenfu's Famous Dragon Well Tea	3	732
Wuyutai West Lake Dragon Well Tea	3	1000

(2) Illegal pesticides were found on 12 samples

Pesticides banned in China for use on tea plants and tea leaves were found on 12 samples from eight different tea companies. Among them, 11 of the samples including Tenfu's Bi Luo Chun tea and jasmine tea produced by Zhang Yiyuan and Wuyutai contained methomyl and endosulfan. These are both banned for use on tea leaves by China's Ministry of Agriculture (proclamation 1586). Fenvalerate, also banned by the Ministry of Agriculture for use on tea leaves (proclamation 199), were found on Hainan State Farms Baisha Green Tea (see Table 2).

These pesticides pose a multitude of direct and indirect risks and harms to human health and the environment. For example the World Health Organization (WHO) classifies methomyl as highly hazardous because of its

high acute toxicity. Endosulfan is another highly toxic pesticide which is known for its persistent toxicity and bio-accumulation effect, and is banned globally¹.

Table 2: Banned pesticides found on the samples

Sample	Pesticides banned from use on tea
Zhang Yiyuan Jasmine Cloud Tea	Methomyl
Wuyutai Jasmine Zhenluo Tea	
Chine Tea West Lake Dragon Well Tea	
Zhu Ye Qing Tea	
Zhu Ye Qing Best Quality Tea	
Tenfu's Famous Bi Luo Chun Tea	
Eight Horses Qiangxin Tianhan Tieguanyin Tea	
Eight Horses Jasmine Tea	
Richun 802, 803, 805 Tieguanyin Tea	
Hainan State Farms Baisha Green Tea	
Eight Horses Qiangxin Tianhan Tieguanyin Tea	Endosulfan
Richun 802, 803, 805 Tieguanyin Tea	

(3) 14 samples contained pesticides that may impair fertility, cause harm to an unborn child or cause heritable genetic damage

¹“Addendum to the working report on the fifth meeting of the Persistent Organic Pollutants Review Committee” summary on the risks of endosulfan ,UNEP/POPS/POPRC.5/10/Add.2

The investigation showed that of the total 18 tea samples, 14 of them from six different tea companies contained carbendazim, benomyl², myclobutanil³ or flusilazole⁴. These pesticides have been identified by the European Union as possible causes of heritable genetic damage or posing potential harm to fertility or an unborn child.

It is the responsibility of the tea companies to ensure the quality of their tea for their consumers, and the most fundamental aspect of a tea's quality must undoubtedly be whether it is safe to drink. The discovery of harmful and banned pesticides on the tested teas shows that some well-known tea companies are ignoring national laws and either turning a blind eye or being complicit with their suppliers' illegal conduct. It shows a complete lack of corporate responsibilities to ensure their product don't harm the environment. The companies clearly fail to have an effective traceability and supply chain control system in place to stop massive use of pesticides, ensure the tea is at least produced in line with national law and standards, and prevent the use of banned pesticides.

Analysis of the Results

(1) The heavy use of pesticides hampers the sustainable development of China's tea Industry in multiple ways

²EU classification of carbendazim (MBC) and benomyl, Repr. Cat. 2; R60, Repr. Cat. 2; R61, Dir. 67/548/EEC

EU classification of myclobutanil, Repr. Cat. 3; R63, Dir. 67/548/EEC

⁴EU classification of flusilazole, Repr. Cat. 2; R61, Dir. 67/548/EEC

China is the world's biggest producer of tea, and it is also the world's biggest user of pesticides. The country's unconstrained use of pesticides is holding back many aspects of the development of China's tea industry.

Additionally, the issue of pesticides is damaging the reputation of Chinese tea and directly affecting exports. The alarm was sounded in February and March this year when pesticide residues in tea being exported from Fujian and then Shaoxing Port were identified by the EU trade authorities as exceeding limits. Another of Chinese tea's major export destinations – Japan – is also tightening restrictions on pesticides in Chinese tea imports as it plans to substantially tighten controls on triazophos and other pesticides⁵.

The immense damage to the tea plantation environment from the heavy use of pesticides also cannot be ignored. The United Nations Food & Agricultural Organization says that excessive pesticide use has a negative effect on the environment and may also affect crop yields. The fact of the matter is that in most cases less than 1% of the pesticide reaches its target – being the pest itself. Instead, the bulk of the pesticide pollutes the air, soil and water⁶. Good quality soil and clean water are the foundation of all China's famous quality tea brands. And the heavy use of chemical pesticides is destroying that foundation.

⁵见《Xiamen Daily》，“Japan to raise pesticide residue controls on tea exports in the next two years ‘What a Disaster’”，see http://news.xmnn.cn/xmxw/201203/t20120316_2222163.htm, 2012年3月19日访问。

⁶Refer to the FAO: 《节约与增长小农作物生产可持续集约化决策者指南》，<http://www.fao.org/ag/save-and-grow/zh/6/index.html>

Finally, heavy pesticide use is threatening the health of both tea planters and tea processors as they come into direct contact with the pesticides used on tea plants. They are the most vulnerable parts of the tea supply chain. Excessive pesticide use without the use of protective measures represents a serious health hazard to these people.

(2) The tea Industry should immediately take steps to reduce pesticide usage

There is only one way for China's agricultural industry to continue to develop but in a sustainable manner, and that is to massively reduce the use of chemical pesticides. This is a crucial step for China's tea industry. The Chinese government is already aware of the problems of excessive pesticide use and has begun to draw up policies to restrict its usage. In June 2011, China's Ministry of Agriculture released a statement titled "Aims to reduce pesticide usage by 20% within the period of the 12th Five Year Plan."⁷ Since 2000, the National Agro-Tech Extension and Service Centre (NATESC) has been promoting green pest management technologies that uses natural materials and biological controls instead of chemical pesticides, helping cut chemical pesticide use in the tea industry.

With the country actively encouraging a green transformation of the tea industry, well-known tea companies, such as China Tea, Tenfu's Tea and

⁷全面推进专业化统防统治力争“12th Five Year Plan”cut chemical pesticide use by 20%, Ministry of Agriculture website http://www.moa.gov.cn/zwl/m/zwdt/201106/t20110615_2030663.htm.

others, should immediately take effective measures to drastically reduce pesticide usage at its source and set a good example for the whole industry.

Greenpeace Demands

Greenpeace urges China's tea companies to fully respect the demands from their customers in regards to food safety, and to ensure the sustainable development of the tea industry by immediately adopting the measures below:

1. Ensure a drastic reduction in pesticide application
2. Establish an effective traceability and supply chain control systems that ensure compliance with use reduction and the law by preventing the use of banned pesticides.

Annex I: Tea Samples

No.	Retailer	Tea	Date of Purchase (y/m/d)	Location of Purchase	Place of Production	Date of Production (y/m/d)	Price RMB per kg
1.	Zhang Yiyuan	Jasmine Cloud Tea	2011/12/19	Chunxiu Road Store, Zhangyiyuan Beijing	Ningde, Fujian	After tomb-sweeping day 2011	270
2.	Zhang Yiyuan	Lion Peak Dragon Well Tea	2011/12/19	Chunxiu Road Store, Zhangyiyuan Beijing	Loose/Zhejiang	After tomb-sweeping day, 2011	640
3.	Wuyutai	Jasmine Zhenluo Tea	2011/12/19	Malian Road Wuyutai Store, Beijing	Fujian	Near tomb-sweeping day, 2011	520
4.	Wuyutai	West Lake Dragon Well Tea	2011/12/19	Malian Road Wuyutai Store, Beijing	Zhejiang	After tomb-sweeping day 2011	1000
5.	China Tea King	China Tea King Dragon Well Tea	2011/12/27	Workers' Stadium China Tea King Store, Beijing	Nanyang Industrial Park, Shouning, Fujian	After tomb-sweeping day 2011	2000
6.	China Tea King	Guapian Tea	2011/12/27	Workers' Stadium China Tea King Store, Beijing	Nanyang Industrial Park, Shouning, Fujian	After tomb-sweeping day 2011	1600
7.	China Tea	West Lake Dragon	2011/12/21	Shuangjing China Tea	Zhejiang	After	660

		Well Tea		Store, Beijing		tomb-sweeping day 2011	
8.	China Tea	Jasmine Tea	2011/12/21	Shuangjing China Tea Store, Beijing	Changsha, Hunan	2011/7/20	120
9.	Sichuan Zhu Ye Qing Tea Company, Co. Ltd	Zhu Ye Qing Tea (gift package)	2011/12/25	Hongcha Village, Neijiang Zhong District, Chengdu	E Mei Mountain, Leshan	2011/7	1644
10.	Sichuan Zhu Ye Qing Tea Company, Co. Ltd	Best quality Zhu Ye Qing Tea (loose)	2011/12/25	Hongcha Village, Neijiang Zhong District, Chengdu	E Mei Mountain, Leshan	Unknown	1000
11.	Hainan State Farm	Baisha Green Tea	2011/12/26	Haigang Tianhua Shanghang, Haikou	Shali County, Hainan	2011/5/11	~1866
12.	Tenfu Famous Tea	Dragon Well Tea	2011/12/19	Malian Road Carrefour, Beijing	Xinchang, Zhejiang	After tomb-sweeping day 2011	732
13.	Tenfu Famous Tea	Bi Luo Chun Tea	2011/12/19	Malian Road Carrefour, Beijing	Leshan, Sichuan	2011/8/31	1280
14.	Eight Horses	Qiangxin Tianhan Tieguanyin Tea	2011/12/20	Malian Road Tea City	Quanzhou, Fujian	2011/10/2	880
15.	Eight Horses	Jasmine Tea	2011/12/20	Shuang Jing Eight Horses Store, Beijing	Nanning, Guangxi	2011/8/12	1500
16.	Richun	802 Tieguanyin	2012/1/16	Shuangjing Richun	South	2011/1/13	400

		Tea			Store, Beijing		Mountain Peak, Anxi		
17.	Richun	803 Tea	Tieguanyin	2012/1/16	Shuangjing Store, Beijing	Richun	South Mountain Peak, Anxi	2011/12/23	600
18.	Richun	805 Tea	Tieguanyin	2012/1/16	Shuangjing Store, Beijing	Richun	South Mountain Peak, Anxi	2012/1/8	1000

Annex II: Tea Pesticide Testing Results

Tea	Type of Tea	No. of Pesticide	Name of Pesticides	Level of pesticide residues (mg/kg)	May Affects fertility	Possible risk to unborn child	May cause genetic damage	Banned in China ⁸
Zhang Yiyuan Jasmine Cloud Tea	Jasmine Tea	8	Chlorfenapyr	0.07				
			Imidacloprid	0.07				
			Acetamiprid	0.11				
			Buprofezin	0.06				
			Carbendazim (MBC)and bennomyl	0.13	Yes	Yes	Yes	
			Chlorpyrifos	0.02				
			Methomyl/Thiodicarb	0.04				Yes
			Thiophanat -methyl	0.05				
Zhang Yiyuan Lin Peak Dragon	Dragon Well (Green Tea)	5	Imidacloprid	0.02				

⁸ Refer to China's Ministry of Agriculture proclamation 1586, and China's Ministry of Agriculture proclamation 199.

Well Tea								
			Acetamiprid	0.01				
			Buprofezin	0.02				
			Thiophanat-methyl	0.08				
			Carbendazim (MBC) and bennomyl	0.03	Yes	Yes	Yes	
Wuyutai Jasmine Zhenluo Tea	Jasmine Tea	5	Imidacloprid	0.06				
			Acetamiprid	0.05				
			Buprofezin	0.03				
			Chlorpyrifos	0.02				
			Methomyl/Thiodicarb	0.02				Yes
Wuyutai West Lake Dragon Well Tea	Dragon Well (Green tea)	3	Dimethoate and Omethoate (sum of)	0.02				
			Imidacloprid	0.02				
			Acetamiprid	0.02				
China Tea King Dragon Well Tea	Dragon Well Tea	5	Acetamiprid	0.02				
			Buprofezin	0.03				
			Carbendazim (MBC)	0.01	Yes	Yes	Yes	

			and bennomyl					
			Imidacloprid	0.02				
			Methomyl/Thiodicar b	0.03				Yes
China Tea King Guapian Tea	Green Tea	5	Bifenthrin	0.06				
			Cyhalothrin lambda	0.05	Yes			
			Cypermethrin	0.26	Yes			
			Chlorpyrifos	0.08				
			Imidacloprid	0.02				
China Tea West Lake Dragon Well Tea	Dragon Well (Green Tea)	4	Imidacloprid	0.01				
			Carbendazim (MBC) and bennomyl	0.05	Yes	Yes	Yes	
			Chlorpyrifos	0.04				
			Thiophanat -methyl	0.02				
China Tea Jasmine Tea	Jasmine Tea	5	Imidacloprid	0.06				
			Acetamiprid	0.08				
			Buprofezin	0.02				

			Carbendazim (MBC) and bennomyl	0.07	Yes	Yes	Yes	
			Thiophanat -methyl	0.11				
Zhu Ye Qing	Green Tea	8	Acetamiprid	0.06				
			Buprofezin	0.01				
			Carbendazim (MBC) and bennomyl	0.03	Yes	Yes	Yes	
			Chlorpyrifos	0.15				
			Dimethoate and Omethoate (sum of)	0.01				
			Imidacloprid	0.08				
			Methomyl/Thiodicarb	0.04				yes
			Thiophanat-methyl	0.02				
Zhu Ye Qing Best Quality Tea	Green Tea	8	Bifenthrin	0.04				
			Cypermethrin	0.05				
			Acetamiprid	0.04				
			Carbendazim (MBC) and bennomyl	0.01	Yes	Yes	yes	
			Chlorpyrifos	0.4				
			Dimethoate and Omethoate (sum of)	0.01				
			Imidacloprid	0.05				

			Methomyl/Thiodicar b	0.09				yes
Hainan State Farm Baisha Green Tea	Green Tea	4	Fenvalerate	0.12				yes
			Acetamiprid	0.04				
			Chlorobenzuron	0.08				
			Imidacloprid	0.02				
Tenfu's Famous Dragon Well Tea	Dragon Well (Green Tea)	3	Chlorfenapyr	0.05				
			Buprofezin	0.11				
			Carbendazim (MBC) and bennomyl	0.02	Yes	Yes	Yes	
Tenfu's Famous Bi Luo Chun Tea	Green Tea	11	Dimethoate and Omethoate (sum of)	0.06				
			Imidacloprid	0.08				
			Pyridaben	0.02				
			Acetamiprid	0.06				
			Buprofezin	0.13				
			Carbendazim (MBC) and bennomyl	0.03	Yes	Yes	Yes	

			Trichlorfon	0.03				
			Chlorpyrifos	0.12				
			Omethoate	0.02				
			Methomyl/Thiodicarb	0.08				Yes
			Thiophanat -methyl	0.06				
Eight Horses Tieguan yin Tea	Oolong Tea	14	Cyhalothrin	0.04				
			Cypermethrin	0.23				
			Chlorfenapyr	0.88				
			Endosulfan sum	0.28	Yes			Yes
			Bifenthrin	1.1				
			Imidacloprid	1.4				
			Pyridaben	0.42				
			Acetamiprid	1.1				
			Indoxacarb	0.17				
			Buprofezin	0.27				
			Clofentezine	0.04				
			Carbendazim (MBC) and bennomyl	0.03	Yes	Yes	Yes	
			Chlorpyrifos	0.19				
			Methomyl/Thiodicarb	1.1				Yes
Eight Horses Jasmine Tea	Jasmine tea	11	Phoxim	0.01				

			Chlorfenapyr	0.18				
			Triadimenol	0.02				
			Fenobucarb	0.03				
			Imidacloprid	0.12				
			Acetamiprid	0.45				
			Buprofezin	0.3				
			Carbendazim (MBC) and bennomyl	0.04	Yes	Yes	Yes	
			Isoprocarb	0.02				
			Chlorpyrifos	0.17				
			Methomyl/Thiodicarb	0.17				Yes
Richun 802 Tieguan yin Tea	Oolong Tea	15	Cyhalothrin	0.21				
			Cyhalothrin lambda	0.17				
			Cypermethrin	0.31				
			Chlorfenapyr	1.8				
			Endosulfan sum	0.35				Yes
			Bifenthrin	1.7				
			Imidacloprid	1.1				
			Pyridaben	0.38				
			Indoxacarab	3.9				
			Buprofezin	0.02				
			Carbendazim (MBC) and bennomyl	0.06	Yes	Yes	Yes	
			Chlorpyrifos	0.29				
			Methomyl/Thiodicarb	0.38				Yes

			Myclobutanil	0.02		Yes		
			Difenoconazole	0.03				
Richun 803 Tieguan yin Tea	Oolong Tea	17	Cyhalothrin	0.45				
			Tebufenpyrad	0.03				
			Cypermethrin	0.43				
			Chlorfenapyr	3.3				
			Endosulfan sum	0.13				Yes
			Bifenthrin	0.88				
			Fenobucarb	0.02				
			Imidacloprid	0.74				
			Pyridaben	0.43				
			Acetamiprid	2.5				
			Indoxacarb	0.18				
			Buprofezin	0.18				
			Carbendazim (MBC) and bennomyl	0.05	Yes	Yes	Yes	
			Chlorpyrifos	0.15				
			Flusilazole	0.02		Yes		
			Methomyl/Thiodicarb	0.24				Yes
			Myclobutanil	0.01		Yes		
Richun 805 Tieguan yin Tea	Oolong Tea	13	Cyhalothrin	0.34				
			Cypermethrin	0.44				

			Chlorfenapyr	2.4				
			Endosulfan sum	0.27				Yes
			Bifenthrin	1.5				
			Imidacloprid	1.4				
			Pyridaben	0.25				
			Acetamiprid	2.5				
			Indoxacarb	0.03				
			Buprofezin	0.19				
			chlorpyrifos	0.25				
			Methomyl/Thiodicarb	0.34				Yes
			myclobutanil	0.01		Yes		