

**SCOTTISH FOOD ENFORCEMENT LIAISON COMMITTEE  
FOOD STANDARDS SUB-COMMITTEE  
SURVEY NO: SF12**

**MSG in food from Chinese takeaways and restaurants**

**Report  
March 2008**

Report prepared by  
Paul Bradley  
West Lothian Council  
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## **Scottish Food Enforcement Liaison Committee Food Standards Sub-Committee**

### **Survey SF12: MSG in food from Chinese takeaways and restaurants**

#### **Summary**

181 samples of Chinese-style meals were taken. 22 samples (12%) failed the maximum level prescribed by the Miscellaneous Food Additives Regulations. A further nine samples (5%) were within 10% of the prescribed limit. Two samples contained MSG at more than twice the statutory limit, while another exceeded the limit by more than three times.

#### **Background**

The use of monosodium glutamate (MSG) in food is controlled by the Miscellaneous Food Additives Regulations 1995. The Regulations permit its use up to a concentration of 1% (10g/kg) in some foods but prohibit its use in others (for example, food for infants). It is used as a flavour enhancer in a variety of foods prepared by food manufacturers and restaurants.

There have been reports of adverse reactions in those who have ingested food containing large quantities of MSG. The reactive symptoms are varied but commonly reported ones are burning skin sensations, heart palpitations, weakness, numbness, muscle tightening, or light-headedness. Most individuals are unaffected by ingesting MSG but for those who are affected the reaction to it can be extremely distressing. Fortunately however, the condition is reversible and the symptoms rarely last for more than a few hours.

Previous survey work in Scotland resulted in the Scottish Food Enforcement Liaison Committee (SFELC) Food Standards Sub-Committee (FSSC) approving guidance in a number of community languages advising on the use of additives in the catering trade.

Despite previous work aimed at reducing levels of MSG in prepared meals from Chinese takeaways there still appeared to FSSC to be use of the additive at levels above the limit prescribed in law.

This survey aimed to establish an accurate overview of the situation and to assess the level of compliance.

#### **Sampling**

181 samples of Chinese style meals were taken by local authority environmental health departments between August 2006 and March 2007. The samples analysed by the four Scottish public analyst laboratories.

A copy of the sample protocol is shown in Annex 1.

#### **Results**

The sample results are tabulated in Annex 2.

181 samples of Chinese-style meals were taken. 22 samples (12%) failed the maximum level prescribed by the Miscellaneous Food Additives Regulations. A further nine samples (5%) were within 10% of the prescribed limit. Two samples contained MSG at more than twice the statutory limit, while another exceeded the limit by more than three times.

An examination of the relative failure rates in particular groups of foods gives the results shown in Table 1.

Food type	Pass	Fail	% pass
Chow mein	42	5	90%
Curry	14	1	93%
Black bean sauce	19	5	79%
Fried rice	27	4	87%
Other	79	7	92%
<b>Total</b>	<b>181</b>	<b>22</b>	<b>88%</b>

**Table 1**

The table suggests that, of the identifiable food types analysed, only black bean sauce meals showed a markedly worse failure rate than other types.

## Discussion

The continued failure of a significant number of samples of Chinese style meals to comply with the MSG limits is disappointing. It is apparent that the previously issued guidance for caterers in this sector has not been as effective as FSSC would have hoped.

The sample results suggest that many types of food can fail the standard and that the problem may be particular outlets rather than food types.

Whilst environmental health staff visiting caterers can reinforce messages regarding MSG use and samples can be taken, it is apparent that a more direct, focussed, approach may be required to ensure an improvement in compliance.

Consideration could be given to a number of options including promotions, discussions with trade groups or prosecution of offenders.

## Recommendations

- Food Standards Agency Scotland (FSAS) should assess current guidance to the Chinese catering sector on MSG use. If gaps or deficiencies are identified in the guidance FSAS should work with stakeholders to provide clear, practical advice
- FSAS should consider, with stakeholders, the best way to promote this advice and enter into a campaign to improve compliance.
- Local authorities faced with illegal MSG use in meals should consider taking formal samples and the application of their enforcement policies.

**SCOTTISH FOOD ENFORCEMENT LIAISON COMMITTEE  
FOOD STANDARDS SUB-COMMITTEE  
SURVEY NO: SF12**

**Protocol for the survey of  
MSG in food from Chinese takeaways and restaurants**

**1 Summary**

Despite previous work aimed at reducing levels of MSG in prepared meals from Chinese takeaways there still appears to be use of the additive at levels above the limit prescribed in law.

This survey aims to establish an accurate overview of the situation and to assess the level of compliance.

All samples will be submitted via FSS. All Scottish authorities have access to FSS and, even if not routinely using the system, are asked to participate.

**2 Background**

The use of monosodium glutamate (MSG) in food is controlled by the Miscellaneous Food Additives Regulations 1995. The Regulations permit its use up to a concentration of 1% in some foods but prohibit its use in others (for example, food for infants). It is used as a flavour enhancer in a variety of foods prepared by food manufacturers and restaurants.

There have been reports of adverse reactions in those who have ingested food containing large quantities of MSG. The reactive symptoms are varied but commonly reported ones are burning skin sensations, heart palpitations, weakness, numbness, muscle tightening, or light-headedness. Most individuals are unaffected by ingesting MSG but for those who are affected the reaction to it can be extremely distressing. Fortunately however, the condition is reversible and the symptoms rarely last for more than a few hours.

Previous survey work in Scotland resulted in SFELC's Food Standards Sub-Committee approving guidance in a number of community languages advising on the use of additives in the catering trade.

**3 Survey Period**

The survey period 1<sup>st</sup> August 2006 – 31 March 2007. However, authorities wishing to submit samples before this date, perhaps to integrate with routine sampling, may do so.

**4 Participation**

All Liaison Groups are invited to participate in the survey.  
The minimum number of samples allocated to each Liaison Group is as follows:

**East of Scotland                      20 samples**

<b>Lothian and Borders</b>	<b>20 samples</b>
<b>North of Scotland</b>	<b>20 samples</b>
<b>West of Scotland</b>	<b>40 samples</b>

#### **4 Resource Implications**

It is anticipated that the cost of this survey can be accommodated within normal sampling and analysis arrangements for each local authority.

#### **5 Sampling and Analysis**

##### Sample Selection

- Samples should be of oriental style meals from catering or takeaway premises
- Only some foods are commonly prepared with MSG, these include chow-mein, curry, fried rice and black bean sauce
- Foods which are not commonly prepared with MSG include sweet & sour and boiled rice. These should not be sampled.

##### Sample collection and transportation

Samples should be taken and transported in accordance with normal procedures.

##### Sample Submission

Sampling officers do not need to fill in a survey proforma.

However, **it is important that FSS is completed uniformly for this survey. The protocol summary advises on the required FSS input.**

##### Analysis

The MSG level in the sample will be determined using the laboratory's normal UKAS Accredited methods.

Results should be uploaded to the FSS central database by 1<sup>st</sup> May 2007

Samples should be considered as failures for this survey where MSG is present in the food at a level exceeding 1%.

**SCOTTISH FOOD ENFORCEMENT LIAISON COMMITTEE  
FOOD STANDARDS SUB-COMMITTEE  
SURVEY NO: SF12**

**Protocol summary  
MSG in food from Chinese takeaways and restaurants**

**Samples** Prepared oriental dishes from caterers or takeaways where MSG can be expected to feature as an ingredient.

Includes

- chow-mein, curry, black bean sauce

Does not include

- Sweet and sour, boiled rice

**Sampling period** 1 August 2006 – 31 March 2007

**FSS**

- Input**
- Reason for sample taken: Surveillance/monitoring
  - Sample was taken as part of a survey
  - Survey Body: SFELC
  - Survey Ref: SF12

**Analysis** MSG level

**Pass/Fail** Samples fail when MSG is present at a concentration over 1%

**ANNEX 2****ANALYSIS RESULTS**

<b>SAMPLENO</b>	<b>FOOD DESCRIPTION</b>	<b>RESULT (g/kg)</b>
782HQN20001264	BEEF IN BLACK BEAN SAUCE	31.73
782HQN20001260	CHICKEN WITH CASHEW NUTS	27.45
782HQN20001267	FRIED RICE	21.78
762M2IRF010000171	CURRY SAUCE	17.86
782HQN20001275	BEEF IN BLACK BEAN SAUCE	16.95
765HQN20001183	FRIED RICE	16.80
777NN20001507	CHICKEN AND GREEN PEPPERS IN BLACK BEAN SAUCE	16.36
761Z0103770000013	CHICKEN AND NOODLE SOUP	15.82
781HQ\000761	CHICKEN CHOWMEIN	15.36
776HQN20005780	BEEF CHOW MEIN	15.31
762M2IRF010000169	CURRY SAUCE	15.07
781HQ\000688	CHICKEN CHOWMEIN	14.70
771HQN20000162	CHICKEN FRIED RICE	14.40
781HQ\000741	CHICKEN CHOWMEIN	14.06
771HQN20000161	CHICKEN W GREEN PEPPER IN BLACK BEAN SAUCE	12.68
762M2IRF010000172	SATAY SAUCE	12.28
772HQN20000697	CHICKEN GREEN PEPPER BLACK BEAN SAUCE	12.09
773HQN20002470	CHAR SUI PORK WITH CHOW MEIN	11.84
775DUN0000250	TAKEAWAY MEAL	10.78
766HQ03490000307	CHICKEN CURRY	10.54
766HQ03490000310	FRIED RICE	10.46
782HQN20001227	FRIED RICE	10.42
773HQN20002472	FRIED RICE	9.84
782HQN20001238	FRIED RICE	9.72
761Z0103770000016	BEEF CURRY	9.65
782HQN20001127	SATAY CHICKEN	9.63
782HQN20001348	FRIED RICE	9.62
782HQN20001186	CHICKEN SATAY	9.55
761Z0103770000017	FRIED RICE	9.48
773HQN20002469	CHICKEN NOODLE SOUP	9.24
768HQN20000368	CURRY SAUCE	9.05
761Z0405620000473	CHICKEN NOODLE SOUP	8.98
761Z0103770000014	SPECIAL CHOW MEIN	8.86
782HQN20001286	BEEF IN BLACK BEAN SAUCE	8.78
782HQN20001235	HOT LEMON CHICKEN	8.56
782HQN20001053	FRIED RICE	8.49
781HQ\000740	CHICKEN CHOWMEIN	8.45
776HQN20005773	BEEF CHOW MEIN	8.40
782HQN20001168	CHIKEN SATAY	8.29
782HQN20001289	FRIED RICE	8.21
782HQN20001380	CHICKEN SATAY	8.09
781HQ\000758	CHICKEN CHOWMEIN	8.02
776HQN20005776	BEEF CHOW MEIN	8.00
777INVN20001403	CHICKEN AND GREEN BEAN IN BLACK BEAN SAUCE	7.92
771HQN20000160	SPECIAL CHOW MEIN	7.89
773HQN20002471	CHICKEN IN BLACK BEAN SAUCE WITH PEPPERS	7.81
782HQN20001271	CHICKEN WITH CASHEW NUTS	7.79
776HQN20005774	BEEF CHOW MEIN	7.70
782HQN20001131	BEEF IN BLACK BEAN SAUCE	7.67
761Z0605620000456	CHICKEN CHOW MEIN	7.67

782HQN20001224	CHICKEN IN BLACK BEAN SAUCE	7.62
781HQ\000718	BEEF BALLS	7.49
782HQN20001143	CHICKEN IN PEKING SAUCE	7.44
760COMN10001270	CHICKEN NOODLE SOUP	7.30
769HQN20000828	BEEF CURRY	7.27
782HQN20001278	FRIED RICE	7.20
776HQN20005782	BEEF CHOW MEIN	6.90
782HQN20001138	SATAY CHICKEN	6.88
781HQ\000742	CHICKEN CHOWMEIN	6.79
782HQN20001391	CHICKEN SATAY	6.72
782HQN20001256	FRIED RICE	6.69
782HQN20001384	CHICKEN IN BLACK BEAN SAUCE	6.67
772HQN20000696	CHICKEN CHOW MEIN	6.64
775KDYN10003114	FRIED RICE	6.62
782HQN20001395	CHICKEN IN BLACK BEAN SAUCE	6.57
781HQ\000753	CHICKEN CHOWMEIN	6.56
769HQN20000827	CHICKEN FRIED RICE	6.42
773HQN20002563	CURRIED PORK (NATURAL)	6.38
781HQ\000712	CHICKEN CHOWMEIN	6.35
771HQN20000163	CHICKEN CURRY	6.25
782HQN20001047	CHICKEN CASHEW NUTS	6.10
782HQN20001231	CHICKEN SATAY	6.08
781HQ\000690	CHICKEN CHOWMEIN	6.02
772HQN20000693	CHICKEN GREEN PEPPER BLACK BEAN SAUCE	5.99
772HQN20000692	CHICKEN CHOW MEIN	5.99
790HQN30000439	CHICKEN CURRY	5.89
768HQN20000366	CHICKEN CHOW MEIN	5.85
768HQN20000367	BEEF IN BLACK BEAN SAUCE	5.69
782HQN20001249	CHICKEN SATAY	5.56
782HQN20001282	CHICKEN SATAY	5.55
765HQN20001182	BEEF IN BLACKBEAN SAUCE	5.53
782HQN20001177	SATAY CHICKEN	5.51
790HQN30000438	CHICKEN WITH BLACK BEAN SAUCE	5.36
781HQ\000754	CHICKEN CHOWMEIN	5.27
761Z0605620000457	FRIED RICE	5.21
790HQN30000440	CHICKEN CHOW MEIN	5.18
782HQN20001398	FRIED RICE	5.11
782HQN20001253	BEEF IN BLACK BEAN SAUCE	5.10
782HQN20001192	FRIED RICE	5.05
782HQN20001134	FRIED RICE	5.01
764HQ0407000388	CHICKEN, MUSHROOM & FRIED RICE	4.97
775KDYN10003115	CHOW MEIN	4.95
782HQN20001341	CHICKEN SATAY	4.93
782HQN20001183	FRIED RICE	4.92
789HQN20000136	CHICKEN CHOW MEIN	4.87
782HQN20001080	CHICKEN CURRY	4.86
782HQN20001180	CHICKEN CURRY	4.85
787HQ04960000367	CHICKEN CURRY	4.79
772HQN20000695	CHICKEN GREEN PEPPER BLACK BEAN SAUCE	4.78
781HQ\000752	CHICKEN CHOWMEIN	4.75
766HQ03490000305	CHICKEN CHOW MEIN	4.72
782HQN20001189	CHICKEN CURRY	4.72
761Z0405620000475	FRIED RICE	4.71
777SUTN20001957	CHICKEN CURRY	4.69
782HQN20001171	CHICKEN CURRY	4.66
769HQN20000826	PLAIN CHOW MEIN	4.62



764HQ0407000387	SOUP - CHICKEN NOODLE	4.57
782HQN20001051	BEEF CHOW MEIN	4.55
764HQ0407000386	SOUP - CHICKEN & SWEETCORN	4.44
781HQ\000760	CHICKEN CHOWMEIN	4.41
787HQ04960000368	CHICKEN CHOW MEIN	4.35
782HQN20001076	CHICKEN CASHEW NUTS	4.33
783IRON05890000293	CHICKEN CHOW MEIN	4.08
783IRON05890000294	BEEF AND MIXED VEG IN BLACK BEAN SAUCE	4.00
776HQN20005777	CHICKEN AND SWEETCORN SOUP	4.00
773HQN20002473	CHICKEN NOODLE SOUP	3.99
761Z0405620000469	CHICKEN CHOW MEIN	3.89
782HQN20001322	CHICKEN SATAY	3.66
782HQN20001345	CHICKEN CURRY	3.61
781HQ\000687	CHICKEN CHOWMEIN	3.60
782HQN20001326	CHICKEN CURRY	3.57
781HQ\000750	CHICKEN CHOWMEIN	3.54
782HQN20001082	FRIED RICE	3.52
773HQN20002564	LAMB IN BLACK BEAN SAUCE WITH GREEN PEPPERS	3.42
777INVN20001404	FRIED RICE	3.41
764HQ0407000389	CHICKEN CURRY & FRIED RICE	3.24
781HQ\000717	CHICKEN CHOWMEIN	3.21
782HQN20001329	FRIED RICE	3.19
769HQN20000825	FRIED RICE	3.11
775DUN0000249	TAKEAWAY MEAL	3.08
760COMN10001577	CHICKEN BALLS IN BATTER	3.07
776HQN20005779	BEEF CURRY	3.00
765HQN20001180	CHICKEN CHOW MEIN	2.98
760COMN10001576	CHICKEN NOODLE SOUP	2.92
773HQN20002562	BEEF CHOW MEIN	2.88
773HQN20002561	CHICKEN NOODLE SOUP	2.88
760COMN10001269	SWEET AND SOUR CHICKEN BALLS	2.87
760COMN10001267	CHICKEN BALLS IN BATTER	2.61
772HQN20000694	CHICKEN CHOW MEIN	2.59
781HQ\000757	CHICKEN CHOWMEIN	2.51
773HQN20002108	CHICKEN	2.40
782HQN20001070	BEEF WITH GREEN PEPPER BLACK BEAN SAUCE	2.38
782HQN20001066	SATAY CHICKEN	2.26
773HQN20002566	EGG FRIED RICE	2.15
773HQN20002565	CHICKEN BALLS	2.15
760COMN10001581	CHICKEN AND SWEETCORN SOUP	2.15
773HQN20002475	CHICKEN IN BLACK BEAN SAUCE	2.13
777RC06640000403	FRIED RICE	2.07
773HQN20002474	CHAR SUI PORK WITH CHOW MEIN	2.01
775DUN0000248	TAKEAWAY MEAL	1.99
782HQN20001146	FRIED RICE	1.92
781HQ\000751	CHICKEN CHOWMEIN	1.89
773HQN20002476	FRIED RICE	1.85
777LOCN20002014	CHICKEN IN BLACK BEAN SAUCE WITH GREEN PEPPERS	1.82
781HQ\000689	CHICKEN CHOWMEIN	1.80
781HQ\000746	CHICKEN CHOWMEIN	1.71
782HQN20001072	FRIED RICE	1.71
781HQ05150000329	CHICKEN CHOWMEIN REPEAT SAMPLE	1.65
782HQN20001220	CHICKEN WITH CASHEW NUTS	1.65
765HQN20001181	FRIED RICE	1.62
776HQN20005778	CHICKEN NOODLE SOUP	1.60

760COMN10001580	CHICKEN BALLS IN BATTER	1.46
782HQN20001057	CHICKEN JALFREZI	1.45
760COMN10001582	CHICKEN BALLS IN BATTER	1.28
760COMN10001579	CHICKEN NOODLE SOUP	1.23
782HQN20001387	FRIED RICE	1.15
789HQN20000135	CHICKEN CHOW MEIN	1.05
766HQ03490000306	BEEF WITH GREEN PEPPERS IN BLACK BEAN SAUCE	1.02
773HQN20002105	PORK CORRIANDER	0.97
761Z0605620000459	FRIED RICE	0.93
761Z0605620000458	CHICKEN CHOW MEIN	0.72
789HQN20000137	CHICKEN CHOW MEIN	0.63
773HQN20002110	FISH	0.50
781HQ\000692	CHICKEN CHOWMEIN	0.50
781HQ\000691	CHICKEN CHOWMEIN	0.40
773HQN20002106	PORK DUMPLING WITH PRAWN	0.37
773HQN20002107	BEEF CELERY DUMPLINGS	0.36
773HQN20002109	VEGETABLE	0.20
760COMN10001268	CHICKEN NOODLE SOUP	0.16
762M2IRF010000170	CHICKEN BLACK BEAN SAUCE	0.00
782HQN20001174	FRIED RICE	0.00