European legislation with regard to quality control gives priority to the health and safety of the consumer. This is partly due to the various health scares of recent years. These led to a growing insecurity on the part of the consumer and increased sceptism as to the safety of processed food products in general. The European spice industry has been affected by cases of, for example, aflatoxins found in nutmeg and chillies, heavy metals in paprika, high bacterial content in pepper and salmonellae in paprika. Some producers were forced to withdraw large consignments of their products from the retail trade or the food processing industry. The companies were mentioned by name in the national media, causing losses running into millions of ECU as well as a series of law suits.

Every product produced in one member state has the legal right to be sold in another member country of the EU. It follows that no individual member country can develop food legislation without regard for legislation in other member states - especially with regard to limiting undesirable substances in food. Work is in progress to standardise legislation within the EU for the following areas:

- aflatoxin limits
- specifications on microbiology, especially salmonellae
- general hygienic standards for food products

Aflatoxin Regulations

The present aflatoxin regulations differ substantially between member states. Official German authorities have recently reported that many samples taken of pepper, paprika and chillies have greatly exceeded the existing German aflatoxin limit of 4ppb/kg. The ESA has now compiled a data base on aflotoxin. Of 13,000 available reports more than 50% were above the limits of the German law. This has resulted in much closer attention being paid to this subject than hitherto.

The European Commission presented a Draft Directive on Aflatoxin in December 1994. It suggested a European-wide limit of 4ppb/kg total aflatoxin content for spices. This limit is likely to become law shortly. Producers in Europe and the growers in the countries of origin will have to comply with this regulation. ESA revised recommendations are included in the section on standards and specifications.

Testing for aflatoxin is an extremely difficult task due to testing problems. To obtain 100% guarantees that the product is free from this substance would require an enormous amount of sampling, which is clearly impractical and uneconomic. Assessment as to whether batches of product will have to be withdrawn when a single positive aflatoxin result has been found in tests needs to take into consideration the type and number of tests that had been previously undertaken on the consignment. It will also need

to ensure that the recommended sampling and testing procedures had been carried out by the supplier.

The German Spice Association has drafted proposals which aim to tighten up sampling procedures while still ensuring that companies that have undertaken adequate due dilgence tests will be able to undertake further sampling and testing and where necessary replace product without fear of prosecution by the health authorities. It is clear that product-specific measures will be required and that exporters will be expected to bear the burden of more and more of these testing activities. Exporters unsure of what procedures need to be followed should obtain information from their agent or importer or contact directly the trade association in the respective member country.

Microbiology

Europe has no legislation for the maximum limits of microbiological contamination in spices. There are, however, guidelines which are referred to by the official national food inspectorates. New ESA recommendations are being finalised (Table 14).

Microorganisms are found everywhere. Since pathogens like salmonella are not naturally occurring on spices, they must develop through poor handling or accidental contamination. Animals, birds and man are the primary sources of pathogens which can contaminate spices through contact with faecal matter. Insects such as flies and cockroaches and rodents like mice, rats and squirrels are also a source of contamination. During the cultivation process microbial control can be carried out as follows:

- Prevent contamination of irrigation water with sewage and animal waste
- Prevent spices from lying on the ground at harvesting
- Prevent animals from entering drying, storage and grading areas
- Dry spices quickly and effeciently to prevent microbial growth
- Avoid drying spices on the soil
- Avoid using contaminated water for washing of spices
- Avoid mixing clean lots with contaminated lots

Moulds and Yeast

Both moulds and yeasts have the capacity for growing over a wide range of temperature and pH conditions. They develop in environments far less moist than required for bacteria. Aspergillus flavus is a potentially dangerous mould which produces a potent mycotoxin known as aflatoxin. Aflatoxins have been found in a wide range of crops, particularly root crops

like ginger and turmeric. Because mycotoxins diffuse through foods and are not completely removed when surface moulds are eliminated, a food may continue to contain toxin even though it appears to be of satisfactory quality after having been cleaned. Protective mechanisms include the following.

- Keep material dry at all times
- Keep spices in covered containers or clean sacks
- Ensure proper air circulation during storage and transport
- Do not place bags directly on the ground
- Maintain storage and transport facilities free of animals and rodents

General Hygiene Standards for Food

Each member country has food safety legislation. These are similar but not identical in all member states. Some countries have more stringent laws than others but all comply to a basic minimum requirement.These standards have been issued in the interest of the consumer's health protection. It is important to know that according to this regulation the food processors determine the critical points for food safety in the course of the process themselves, and that they are obliged to carry out the supervision and the relevant documentation of it. The concept of these safety control measures is summarised in the Hazard Analysis Critical Control Points (HACCP), and includes the following steps:

- Analysis of potential risks in foodstuffs. For the spice industry this includes among other the supply of spices as raw materials.
- Identification of those stages in the process in which risks may occur. For the spice industry such stages can occur when processing the spices or when mixing them with other food.
- Determination and execution of effective control and supervision proce dures for these critical points.
- Special execution regulations are part of these general standards which are of great importance for the spice industry as well.

It follows from the above that the legislative bodies in Europe require impeccable quality standards and are determined to endorse these standards by law. Every producer of food products must acquaint himself with the prevailing legislation at the due time. The same applies to the growers, exporters and spice producers in the countries of origin. Those exporters that strictly comply with these standards, however, will be offered a good chance for increased market share.

For the UK the Imported Food Regulations 1984 provide general rules which are applied to imports from outside the EC. The regulations prohibit the importation of such food that is unfit for human consumption or is unsound or unwholesome. The authorities may examine, detain, sample and test any consignment where they believe such action is appropriate. Once imported into the UK, produce is subject to the requirements of the Food Safety Act 1990. This covers a range of issues including labelling, additives, preservatives, and composition of food. UK legislation is now among the most stringent in Europe. Products that meet UK standards will hence meet the legislative standards of almost all the other EU member states.

Codex Alimentarius Commission

The Codex Alimentarius Commission set up jointly by the FAO/WHO prepared in October 1994 a draft code of Hygiene Practice for Spices and Dried Aromatic Plants. This is used as the basis of much of the subsequent legislation and recommendations in this field. (Codex Alimentarius Commission 1995, Report on the 27th Session of the Codex Committee on Food Hygiene, Washington DC). This report covers hygiene interventions during cultivation and post-harvest handling, recommendations on the design and establishment of drying and processing facilities, e.g washing and changing facilities, effluent and waste disposal, cleaning and disinfection of product, medical examination and personal cleanliness.

Quality Assurance Programmes

According to due diligence legislation and consumer expectations, most European spice companies have implemented an internationally recognised quality assurance programme. In the spice industry, this particularly refers to purchasing spices as raw material. The concept of quality policy in enterprises comprises the following steps:

- Risk analysing during production and marketing (HACCP concept)
- Implementation of quality safety system according to ISO 9000/ISO 9002 requirements
- Internal quality requirements for spices in the company, so-called speci fications

Cleanliness Specifications for Whole Spices

The American Spice Trade Association (ASTA) has a schedule of minimum cleanliness specifications for whole spices and spice seeds that is widely accepted as a minimum trading standard throughout the trade. The limits of the various contaminants permitted under these specifications is summarised in Table 13.

Table 13. Cleanliness Specifications of ASTA

Cleanliness Specifications	Whole Insects, Dead	Excreta, Mammalian	Excreta, Other	Mould	Insect Defiled/ Infested	Extraneous/ Foreign Matter
Name of Spice Seed or Herb	By Count	By Mg/Lb	By Mg/Lb	% By Wgt.	% By Wgt.	% By Wgt.
Allspice	2	5	5.0	2.00	1.00	0.50
Anise	4	3	5.0	1.00	1.00	1.00
Caraway	4	3	10.0	1.00	1.00	0.50
Cardamom	4	3	1.0	1.00	1.00	0.50
Cassia	2	1	1.0	5.00	2.50	0.50
Cinnamon	2	1	2.0	1.0	1.00	0.50
Celery seed	4	3	3.0	1.00	1.00	0.50
Chillies/ capsicums	4	1	8.0	3.00	2.50	0.50
Cloves	4	5	8.0	1.00	1.00	1.00*
Coriander	4	3	10.0	1.00	1.00	0.50
Cumin seed**	4	3	5.0	1.00	1.00	0.50
Dill seed	4	3	2.0	1.00	1.00	0.50
Fennel seed	(2)	(2)	(2)	1.00	1.00	0.50
Ginger	4	3	3	(3)	(3)	1.00
Mace	4	3	3	2.00	1.00	0.50
Nutmeg (Broken)	4	5	5	(4)	(4)	0.50
Nutmeg (White)	4	0	0	(5)	(5)	0.00
Black Pepper	2	1	1	(6)	(6)	1.00
White Pepper	2	1	1	(7)	(7)	0.50
Turmeric	3	5	5	3.00	2.50	0.50

*** Clove stems** - A 5% allowance by weight for unattached clove stems over and above the tolerance of Other Extraneous Matter is permitted. **** Cumin Seed** - 9.5% total ash, 1.5% acid insoluble ash., ***** Oregano** - Sumac negative

(2) **Fennel Seed**: In the case of fennel seed, if more than 20% of the sub samples contains any rodent, other excreta or whole insects, or an aver age of 3 mg/lb of mammalian excreta, the lot must be reconditioned.

(3) **Ginger:** More than 3% mouldy pieces and/or insect infested pieces by weight.

(4) **Broken Nutmeg:** More than 5% mould/insect defiled combined by weight.

(5) **Whole Nutmeg:** More than 10% insect infested and/or mouldy pieces, with a maximum of 5% insect defiled pieces by weight.

(6) 1% mouldy and/or infested pieces by weight

(7) 1% mouldy and/or infested pieces by weight

Note: Some additional specifications concerning reconditioning are included in ASTA Specifications

Minimum Quality Specifications

A range of national and international standards organisations have established minimum quality standards for individual spices and herbs.

These standards are being continually revised. A summary of the key minimum chemical standards, prepared by the European Spice Association, is shown in Table 14.

Table 14 ESA Specifications for Quality Minima for Herbs and Spices

Product (whole form)	Ash % W/W MAX	Acid-insoluble Ash % W/W MAX	H2O % W/W MAX	Volatile Oil 5 V/W MIN
ANISEED	9 (ISO)	2.5 (AFNOR)	12 (ISO)	1 (ISO)
DUTCH CARAWAY (IOS)	8	1.5	13	2.5
CARDAMOM	9	2.5	12	4
CELERY SEED (ISO)	12	2.5	12	4
CHILLIE (ISO)	10	1.6	11	-
CINNAMON & CASSIA (ESA)	7	2	15 (under review as at 1.7.95)	0.4
CLOVES	7 (ISO)	0.5 (ISO)	12 (ISO)	14 (AFNOR)
CORIANDER	7 (ISO)	1.5 (ISO)	12 (ISO)	0.3 (ESA)
CUMIN (ISA)	14	3	13	1.5
DILL SEED (ESA)	10	2.5	12	1
FENNEL SEED (ISO)	9	2	12	1.5
GARLIC POWDER	6 (ESA)	0.5 (ISO)	7 (ESA)	- (ISO)
GINGER	8 (ISO)	2 (SA)	12 (ISO)	1.5 (ISO)
MACE (ISO)	4	0.5	10	5
NUTMEG	3 (ISO)	0.5 (ISO)	12 (ESA)	6.5 (ESA)
PAPRIKA POWDER (ESA)	10	2	11	-
PEPPER BLACK	7 (ISO)	1.5 (ESA)	13 (ESA)	2 (ISO)
PEPPER WHITE	3.5 (ISO)	0.3 (ISO)	13 (ISA)	1.5 (ESA)
PIMENTO				
Jamaica	5 (ESA)	0.4 (ISO)	12 (ISO)	3.5 (ISO)
Other origins	5 (ESA)	1 (ESA)	12 (ISO)	2 (ESA)
SAFFRON WHOLE (ISO)	8	1	12	-
SAFFRON GROUND (ISO)	8	1.5	10	-
THYME	14 (ISO)	4 (ESA)	12 (ISO)	1 (ISO)
TURMERIC				
WHOLE (ISO)	8	2	12	2.5
GROUND	9 (ISO)	2.5 (ESA)	10 (ISO)	1.5 (ESA)

Source: European Spice Association 1995.
Note: Abbreviation in brackets refer to National Standards Organisations. Acid Insoluble Ash gives an indication of the extraneous matter content.

Pesticide Residues

The EEC Directive 90/642 in force since November 1970 has been extended several times, as a result of new toxicological evaluations of pesticides which have to be incorporated into legislation. Although regulation 90/642/EC on Maximum Residue Level (MRL's) has been adopted by the Member States, the list of MRL's is not yet complete.

Spices are clearly incorporated into the scope of this Directive. As a result the national Spice Associations and the European Spice Association will have to come forward with suggestions concerning the maximum pesticide limits in spices. This is a difficult task as there is insufficient information on applied pesticides in the countries of origin. Collaboration with overseas growers will be required. If the industry cannot suggest any limits for a particular product then any spice containing a residue of that particular pesticide residue will be excluded from sale.

The German Government is very actively involved in the subject matter of pesticides. It's suggestions imply particularly drastic restriction of these limits. The chart below shows such a list of pesticides in spices and the proposed reduction of limits for some chemicals (see Table 15).

In the UK The Pesticides (Maximum Residue Levels in Food) Regulations 1988 specify the maximum levels of pesticides which may be left in a range of foods. Maximum residue levels (MRLs) are set for over 1000 pesticide/commodity combinations. Produce containing residues in excess of an MRL can be seized or destroyed. If the pesticide manufacturers' instructions are followed, maximum residue levels are not likely to be exceeded.

A Compendium of Pesticide Regulation in the European Community (Oct 1989) has been compiled by EUCOFEL

Herbicide Recommendations

There are few formal specific recommendations for the use of herbicides on spices, herbs and aromatic plants. Importers are increasingly concerned with residue levels in the final product and where possible growers should minimise the use of herbicides and ensure they use products with a minimum residual potential. Some herbicides like Bromoxynil, Thiourea (ANTU) and Nitrofen are banned in certain EU member states. Most of the recommendations and restrictions are covered under the heading of pesticides.

Cleaning and Reconditioning

Whether spices are processed at origin or in Europe the following minimum steps must be taken

- Grading

- Cleaning by means of a) sieves b) air seperators
- Additional cleaning using a) stone seperators b) magnets c) metal detectors
- Germ reduction (usually by means of steam)
- Packing in bulk bags for shipment to retail packers

Table 15 - Pesticide Residues in Spices: Sample Reports and Recommendations

	Samples taken			Recommendations		
PRODUCT	Lowest found value (ppm)	Highest found value (ppm)	Average values (ppm)	Former Highest Recommended value (ppm)	New Highest Recommended values (ppm)	Lower Recommended value (ppm)
Lindan	0.001	0.99	0.013-0.17	2.00	0.01	0.005
Chlorpyrifos	<0.05	3.55	0.1-1.795	2.00	0.05	0.05
Quintozen	0.003	1.79	0.006-0.17	1.00	0.01	0.005
Gessarntendosulfa	0.013	1.2	0.24-0.27	30.0	0.10	0.02
Pirlmiphos-methyl	0.003	2.51	0.12-0.269	5.00	0.05	0.05
Phosalon	0.05	0.40	0.05	2.00	0.05	0.10
Dicofol	<0.04	1.71	0.21	0.05	0.05	0.05
Tetradifon	0.01	0.18	0.01-0.18	0.01	0.05	0.01
Malathion	0.005	5.30	0.057-2.68	8.00	0.05	0.05
Brompropylat				5.00	0.05	0.05
Chlorbenzilat				2.00	0.05	0.20
Dimathoat	0.022	0.46	-	1.00	0.05	0.05
Gmethoat	0.07			0.40	0.40	0.05
HCH ohne Lindan	0.002	8.40	0.037-0.67	0.20	0.20	0.01
HCB (Hexachlorbenzol)	0.002	19.90	0.011-1.47	0.10	0.10	0.006
DDT	0.001	6.27	0.04-0.438	1.00	1.00	0.03
Aldrin & Dieldrin	0.002	12.00	0.004-2.64	0.10	0.10	0.006
Azinphos-methyl				1.00	0.05	0.10
Bromophos	0.005	0.05		2.00	0.10	0.05
Bromophos-ethyl	0.33		0.33	2.00	0.05	0.05
Chlordan	0.041			0.05	0.05	0.005
Chlorfenvlnphos	0.27			1.00	0.05	0.05
Chlorpyrifos-methyl		0.21		5.00	0.05	0.05
Chlorthalonil				0.20	0.01	0.02
Diazinon	0.005	0.06	0.026	0.50	0.05	0.05
Dicloran	0.03			0.10	0.10	0.006
Dichlorvos	0.05	1.75	0.05	2.00	0.10	0.05
Dioxthlon				3.00	0.05	0.05
Disulfoton				10.00	0.01	0.05
Ethion	0.1	0.70		2.00	0.05	0.05
Fenltrothion	0.00		0.115	2.00	0.05	0.05
Fensulfothion				0.10	0.02	0.05
Formothion				0.20	0.01	0.05
Haptachlor und-expoxid	0.001	28.70	0.001-5.629	0.10	0.10	0.005

Source* Fachverband der Gewurzenwahre: Bonn

All these operations should be undertaken in an environment that meets the health and safety legislation of the importing country. The different types of equipment required to undertake most of the above activities for the removal of particular contaminant types in particular spices, based on ASTA recommendations, are listed as Table 16.

Table 16. Recommended Cleaning Equipment

	Whole insects dead	Excreta rodent	Excreta other	Insect defiled	Extraneous matter
NAME OF SPICE, SEED OR HERB	**RECOMMENDED MACHINE BY REFEENCE NUMBER**				
ALLSPICE	8	8	8	2 + 9	8
ANISE SEED	4	4	4		4
CARAWAY	4	4	4		4 + 3
CARDAMOM	9	9	9	2 + 9	9 + 3
CASSIA/CINNAMON	9	9	9	2 + 9	9 + 3
CELERY SEED	4	4 + 3	4 + 3		4 + 3
CHILLIES	9	9	9	2 + 9	9 + 3
CLOVES	9	9	9	2 + 9	9 + 3
CORIANDER	8	8	8	2 + 9	8
CUMIN SEED	4	4	4		4 + 3
FENNEL SEED	4	4a	4		4 + 3
GINGER (WHOLE & SPLIT)	9	9	9	2 + 9	2 + 9 + 3
NUTMEG (WHOLE)	7	7	7	2 + 9	9
BLACK PEPPER	8	8	8		8
WHITE PEPPER	8	8	8		8
TURMERIC	7	7	9	2 + 9	2 + 9 + 3

Number	Machines	Number	Machines
1.	Aspirator (Air Separator)	6.	Sifter aspirator
2.	Rotary Knife Cutter	7.	Plain Sifter
3.	Destoner	8.	Spiral Gravity Separator
4.	Vacuum Gravity Separator (Air Table)	9.	Air Screen Separator
5.	Cylinder Separator (Indent)	10.	Magnets

Source: ASTA.

Note: This chart matches the spices and typical contaminants to the machine best suited for separation.

Sterilisation of Spices

Safe and efficacious methods of sterlising spices are among the most controversial issues facing the European spice industry. Under the prevailing production and handling conditions, most spices and herbs contain a large number of micro organisms capable of causing spoilage or, more rarely, disease. The source of contamination may be dust, insects, faecal materials and possibly water used in the soaking and pre-processing operations. Fungal growth may appear prior to drying or during storage and shipping. Adulteration with other foodstuffs or minerals uually takes place at the grinding or repacking stage. As detection methods become more and more sophisticated the number of reports of bacteriological and chemical contamination increases.

Although spices are not an ideal substrate for the growth and survival of Salmonella, this has been found from time to time as well as fungal contaminants like Aspergillus and Penicillium.

Chemical Fumigation

Because of the volatility and heat sensitivity of the delicate flavour and aroma components of spices and herbs, normal heat sterilisation cannot be used without damaging product quality. The most widely used method of decontamination of dry ingredients is fumigation. Until recently, ethylene oxide was widely used. Because of the health hazards attached to its use an EC Directive prohibits the use of ethylene oxide within the EC after 1990 without derogation. An alternative widely used in the USA is methyl bromide. This has been shown to be highly effective on fruits, vegetables and flowers but claims that it is damaging to the ozone layer have led to its use being phased out under the terms of the Montreal Protocols. Products imported from outside the EU which have been fumigated with either of these products will no longer be acceptable. Exporters must consult with importers over acceptable fumigants to use prior to shipment.

Irradiation

Irradiation was widely considered the ideal solution to the problem of contamination, being a cheap and reliable way of sterilisation without causing any damage to quality of the spice. An International Consultative Group on Food Irradiation under the auspices of the International Atomic Energy Agency has undertaken a detailed review of the subject and in 1992 produced a report which basically came out in favour of its application under close supervision. A World Health Organisation study in 1994 also came out in support of the technique and recommended it should be more widely adopted as a way of reducing food-borne diseases. A large number of countries have legalised the use of irradiation technology (see Table 17) but, particularly in Europe, there has been strong consumer opposition to its use in foodstuffs. As a result almost all major suppliers of branded

spices and herbs refuse to use irradiated raw materials even though it may be legally allowed.

EU member states have been unable to agree on common legislation on the issue. The Netherlands has legalised its use and irradiates spices, herbs and vegetables using this method. The proposed "Directive on Food Products and Ingredients Treated with Ionising Rays" lays down methods of controlling irradiation plants and the use of techniques for foods both from within and outside the EU. Although this has not been signed, the EC has compromised by passing in 1991 an amendment to the Food Labelling (Amendment) (Irradiated Food) Regulations of 1990. Henceforth all foods that have been irradiated must carry on the label the words "irradiated" or "treated with ionising radiation". Exporters should check with their prospective EU partners before shipping product that has been irradiated.

Table 17. List of clearance on radiation decontamination of spices, condiments, herbs and dried vegetable seasonings

(As of 31 December 1991, grouped according to country)

Country	Product	Dose (kGy)
Belgium	black/white pepper	up to 10
	Paprika powder	up to 10
	different spices (78 products)	up to 10
Denmark	spices and herbs	up to 15 (max)
		up to 10 (aver.)
Finland	dry and dehydrated spices and herbs	up to 10 (aver.)
France	spices and aromatic substances (72 products inclusive powdered onion and garlic)	up to 11
	aromatic herbs (frozen)	up to 10
Hungary	spices	6 (aver.)
Netherlands	spices and herbs	up to 10
Norway	dried spices	up to 10
Poland	spices and herbs	up to 10
UK	spices and condiments	up to 10 (overall aver.)

Steam Sterilisation

The alternative sterilisation method used by almost all the major spice packers in Europe is that of steam sterilisation. No chemicals are involved and while costs are certainly higher than for irradiation or chemical fumigation it is far more acceptable to the customer.

The main problem with steam sterlisation is to avoid damaging the product through overheating and to prevent the colour and flavour principles being volatised. Recapturing these volatile substances during the recondensation phase is essential to preserve flavour. Various patented equipment has been developed such as McCormicks' Micromaster or Fuchs' Micro Control which provide sufficient heat to kill most germs without losing the volatile oils. This type of equipment has been found to neutralise coliforms, listeria, most Salmonella, mould and yeasts. It also helps reduce the incidence of heat resistant spore forming bacteria like Bacillius or Clostridium.

Another method of sterilisation applicable to industry is microencapsulation. Here the spice is very rapdily heated. Any volatiles driven off in the process are trapped within the capsule coating, ensuring no loss of flavour. Finally, a technology which is gradually gaining acceptance is carbon dioxide. CO^2 is already being used as a clean and effecient solvent for spice extraction purposes. Its use as a fumigant has been limited due to cost.

Solvent Residues in Processing

Another area of increasing concern to consumers in Europe is the use of chemical solvents in food processing and the level of residues left on the product after solvent recovery has been completed. Various solvents have been removed as unsafe while others can be used only in limited circumstances. The growing interest in carbon dioxide extraction techniques, a clean and completely safe solvent yet expensive technique, is partly a reaction to these apprehensions.

Recommendations concerning the determination and use of solvents in the extraction and processing of spices and herbs are largely in the hands of trade associations and research bodies. The International Organisation for the Flavours Industry (IOFI), the European Spice Association (ESA) and the American Spice Trade Association (ASTA) all make non-mandatory recommendations in this area. The latest IOFI recommendations are as follows:

	Maximum level (ppm in product)
Butane	1
Propane	1
Isobutane	1
Toluene	1
Cyclohexane	1
Hexane	1
Light Petroleum	1
Methanol	10
Butan -1-ol	10
Acetone	2
Ethylmethylketone	2
Ethyl acetate	10
Diethyl ether	2
Dibutyl ether	2
Dichloromethane	2
Carbon Dioxide	no limit

Note: Carrier solvents, other flavouring substances and some natural food materials can be used as extraction solvents; their limits are not specified.

Limits on Usage of Spices and Spice Extracts in Foodstuffs

The Council of Europe in 1981 prepared a detailed report giving a list of natural sources of flavourings according to their acceptability for use in food. It also draws attention to certain sources of natural substances which present a hazard to public health. This report and its subsequent amendments include all the major spices, spice extracts and other natural flavourings used in the European spice industry.