

# **THE REGULATORY ENVIRONMENT FOR FOOD IRRADIATION**

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# **SCOPE**

**THE NATURE OF FOOD IRRADIATION REGULATIONS**

**SIGNIFICANT DEVELOPMENTS IN COUNTRY  
REGULATIONS**

**NEW INTERNATIONAL STANDARDS PASSED  
BY THE CODEX ALIMENTARIUS COMMISSION AND THE  
INTERNATIONAL PLANT PROTECTION COMMISSION  
IN 2003**

**THE MODIFICATION OF THE CODEX GENERAL  
STANDARD FOR IRRADIATED FOOD  
AND THE ISSUE OF 2 ALKYL CYCLOBUTANONES.**

# **IMPORTANCE OF REGULATIONS**

## **REGULATIONS PROVIDE;**

- **AN ENABLING ENVIROMENT FOR TRADE**
- **A BASIS FOR CONSUMER ACCEPTANCE OF THE PRODUCT**
- **A GUIDELINE FOR INDUSTRY'S USE OF THE TECHNOLOGY**

# **COUNTRIES WITH REGULATIONS**

➤ **ABOUT 40 COUNTRIES HAVE FOOD IRRADIATION REGULATIONS.**

➤ **SOME OF THESE COUNTRIES ARE THE FF:**

**AUSTRALIA, BRAZIL, BANGLADESH, CANADA, CHINA, CROATIA, TURKEY, EU, INDONESIA, INDIA, ISRAEL, KOREA, MALAYSIA, PAKISTAN, POLAND, PERU, SINGAPORE, SYRIA, THAILAND, TURKEY, UNITED STATES.**

**EU – BELGIUM, FRANCE, GERMANY  
THE NETHERLANDS, UK**

# **REGULATIONS FOR FOOD IRRADIATION**

**IN MOST COUNTRIES, FOOD IRRADIATION IS  
REGULATED LIKE A FOOD ADDITIVE .**

**AN APPROVAL IS REQUIRED FOR EVERY FOOD  
ITEM TREATED FOR A SPECIFIED PURPOSE**

# **SPECIFIC AUTHORIZATIONS FOR IRRADIATED FOODS IN THE UNITED STATES**

## **PRODUCT**

## **PURPOSE**

## **DOSE**

**Pork carcasses  
or fresh non-heat  
processed cuts.**

**control  
of *Trichinella  
spiralis***

**0.3 – 1.0 kGy**

**Poultry, whole  
Fresh or frozen, ready  
to cook, deboned**

**control of  
food-borne  
pathogens**

**not to exceed  
3 kGy**

**Refrigerated or frozen  
uncooked ground meat,  
meat by-products**

**same as above**

**max. 4.5 kGy  
for refrigerated  
Max 7.0kGy  
for frozen**

**Others**

# **EXCEPTION**

**COUNTRIES THAT ADOPT THE ICGFI MODEL  
REGULATION FOR FOOD IRRADIATION**

**THE ICGFI MODEL REGULATION RECOMMENDS  
APPROVAL OF IRRADIATED FOODS  
BY CLASS OF FOOD AND PURPOSE OF TREATMENT**

***ICGFI – INTERNATIONAL CONSULTATIVE GROUP  
ON FOOD IRRADIATION. A GROUP OF GOVERNMENT  
DESIGNATED EXPERTS OPERATING UNDER THE AEGIS OF  
FAO/WHO/IAEA***

# TECHNOLOGICAL DOSE RANGES FOR VARIOUS FOOD CLASSES

## Examples For Classes 1,2 and 5 (As Recommended by ICGFI)

CLASSES OF FOOD	PURPOSE OF TREATMENT	TECHNOLOGICAL DOSE RANGE (kGy)		Reference to ICGFI Document No.
		Min.	Max.	
Class 1: Bulbs, roots and tubers	Inhibit sprouting	0.05	0.2	8
Class 2: Fresh fruits and vegetables (other than Class 1)	a) delay ripening	0.2	1.0	6
	b) shelf-life extension	1.0	2.5	6
	c) quarantine control*	0.15	1.0	7, 13, 17
Class 5: Raw poultry and meat and their Products	a) reduction of pathogenic micro-	1.0	7.0	4, 12
	b) shelf life extesion	1.0	3.0	
	c) control of infection by parasites	0.3	2.0	



## **BASIS FOR THE ICGFI MODEL REGULATION**

**It is possible to classify food products where the treatment is intended to achieve an identical technological purpose, according to similarity in kind and composition**

**Different food items of similar composition give rise to similar radiolytic products**

# **HARMONIZATION OF REGULATIONS THROUGH THE ICGFI MODEL REGULATION FOR FOOD IRRADIATION**

## **ASEAN\* MEMBER COUNTRIES**

**BRUNEI-DARUSSALAM, CAMBODIA, INDONESIA,  
LAO-PDR, MALAYSIA, MYANMAR,  
PHILIPPINES, SINGAPORE, THAILAND, VIETNAM.**

## **THE RCA\* MEMBER COUNTRIES**

**BANGLADESH, CHINA, INDIA, KOREA, PAKISTAN,  
SRI LANKA AND SOME ASEAN MEMBER COUNTRIES**

**ONLY A FEW OF THE ABOVE COUNTRIES HAVE  
COMPLETED ADOPTING THE ICGFI MODEL INTO  
NATIONAL REGULATIONS.**

***\*ASEAN – ASSOCIATION OF SOUTHEAST ASIAN NATIONS***

***\*RCA – REGIONAL COOPERATIVE AGREEMENT FOR TRAINING  
IN NUCLEAR TECHNIQUES IN FOOD AND AGRICULTURE***

# **HARMONIZATION OF REGULATIONS**

**HAS ENCOURAGED COUNTRIES TO ADOPT  
THE ICGFI MODEL IN NATIONAL  
REGULATIONS**

**EXPECTED TO FACILITATE TRADE IN IRRADIATED  
FOODS BETWEEN MEMBER COUNTRIES.**

# **REGULATIONS FOR FOOD IRRADIATION**

## **MOST COMMON TYPES OF TREATMENT OBJECTIVES AND FOOD ITEMS APPROVED**

### **➤ FOR PATHOGEN CONTROL**

**SPICES, HERBS, DRIED VEGETABLES,  
DRIED FRUITS**

**FROZEN PRAWNS, FROG LEGS, FISH, SEAFOODS  
POULTRY MEAT**

**GROUND BEEF, SAUSAGES**

**TRADITIONAL FOODS, DIETARY SUPPLEMENTS**

### **➤ FOR SPROUT INHIBITION**

**ONIONS, GARLIC AND POTATES**

# **REGULATIONS FOR FOOD IRRADIATION**

**NUMBER OF COUNTRIES WITH REGULATIONS  
ALLOWING THE USE OF FOOD IRRADIATION  
IS LIMITED, REFLECTING THE LIMITED  
COMMERCIALIZATION OF THE PROCESS.**

**SCIENCE BASED INFORMATION HOWEVER  
FOR THE DEVELOPMENT OF REGULATIONS  
ON FOOD IRRADIATION IS EXTENSIVE,  
MORE THAN ANY OTHER FOOD PROCESS**

# **DEVELOPMENTS IN REGULATIONS FOR FOOD IRRADIATION**

## **DEVELOPMENTS IN THE UNITED STATES**

**THE US IN 1997 ALLOWED THE USE OF IRRADIATION FOR THE CONTROL OF PATHOGENS AND THE EXTENSION OF SHELF LIFE OF REFRIGERATED OR FROZEN, UNCOOKED GROUND MEAT PRODUCTS AND MEAT BYPRODUCTS.**

**(Code of Federal Register Title 21, vol3, Revised as of April 1, 2002)**

### **DOSE:**

**FOR REFRIGERATED PRODUCTS NOT TO EXCEED 4.5 kGy  
FOR FROZEN PRODUCTS, NOT TO EXCEED 7 kGy**

# **DEVELOPMENTS IN THE UNITED STATES**

**OCTOBER 2002, THE US ALLOWED THE USE OF  
IRRADIATION AS A PHYTOSANITARY TREATMENT  
FOR IMPORTED FRUITS AND VEGETABLES.**

**(Federal Register vol 67 no 205, October 23, 2002)**

**THE REGULATION SPECIFIES A PROPOSED DOSE FOR  
11 FRUIT FLIES OF 150 –250 GRAY  
AND FOR THE MANGO SEED WEEVIL OF 100 GRAY**

**THE DOSE SHOULD BE SUFFICIENT TO PREVENT ADULT  
EMERGENCE OF EACH SPECIES OF FRUIT FLY IN  
FRUIT AND VEGETABLES.**

# **DEVELOPMENTS IN AUSTRALIA**

## **POSITIVE DEVELOPMENTS IN AUSTRALIA**

**AUSTRALIA LIFTED ITS MORATORIUM ON FOOD IRRADIATION IN 1999**

**IN 2003 IT APPROVED THE IRRADIATION OF A RANGE OF TROPICAL FRUITS AS A PHYTOSANITARY MEASURE**

**THESE FRUITS ARE BREADFRUIT, CARAMBOLA, CUSTARD APPLE, LITCHI, LONGAN, MANGO, MANGOSTEEN, PAPAYA AND RAMBUTAN**



# **BENEFITS OF IRRADIATION AS A PHYTOSANITARY MEASURE**

**IT WILL MINIMIZE THE DESTRUCTIVE EFFECTS  
OF HEAT TREATMENTS, COLD AND FUMIGATION.**

**IT WILL ALLOW TREATMENT OF FRUITS AT  
A LATER STAGE OF RIPENESS WHICH LEADS TO  
BETTER QUALITY FRUITS AT TABLE RIPE STAGE.**

**BECAUSE OF ITS PENETRATION INTO THE FRUIT  
IT IS EFFECTIVE FOR CERTAIN TYPES OF PESTS SUCH AS  
THE MANGO SEED WEEVIL, FOR WHICH OTHER TREATMENTS  
ARE NOT EFFECTIVE**

# **DEVELOPMENTS IN CANADA**

**PROPOSED NEW REGULATIONS INVOLVE CLEARANCES  
FOR POULTRY, SHRIMP AND MANGOES**

**CURRENTLY ONLY SPICES ARE IRADIATED IN  
COMMERCIAL VOLUMES IN CANADA**

# **DEVELOPMENTS IN THE EUROPEAN UNION**

**DIRECTIVE 1992/2/EC COVERS  
GENERAL AND TECHNICAL ASPECTS  
LABELLING  
CONDITIONS FOR AUTHORISING FOOD  
IRRADIATION**

**DIRECTIVE 1999/3/EC COVERS  
ESTABLISHMENT OF A COMMUNITY LIST OF  
FOODS AND FOOD INGREDIENTS  
THAT CAN BE TREATED.**

# **DEVELOPMENTS IN THE EU ....**

**FAILED TO COMPLETE THE “POSITIVE LIST” OF PRODUCTS ALLOWED TO BE SOLD IN THE EU BY THE YEAR 2000 DEADLINE.**

**THE CURRENT LIST ALLOWS ONLY “ DRIED SPICES, HERBS, AND VEGETABLE SEASONING, TO BE IRRADIATED.**

**BELGIUM, GERMANY, ITALY, NETHERLANDS, THE UK WERE ALLOWED TO MAINTAIN THEIR NATIONAL AUTHORIZATIONS FOR CERTAIN FOODS.**

# **OPINION OF THE ECONOMIC AND SOCIAL COMMITTEE OF THE EU**

**TECHNICAL NEED – THE PREVAILING SCIENTIFIC  
VIEW IS THAT IRRADIATION IS TECHNICALLY  
NECESSARY PARTICULARLY TO REPLACE USE  
OF CHEMICALS**

**SAFETY - PREVAILING SCIENTIFIC OPINION IS THAT  
IRRADIATED FOODSTUFFS POSE NO DANGER TO  
THE CONSUMER**

# **OPINION OF THE ECONOMIC AND SOCIAL COMMITTEE OF THE EU CONT'D...**

**DETECTION - ANALYTICAL METHODS ARE NOW  
AVAILABLE TO IDENTIFY VIRTUALLY EVERY  
CASE OF IRRADIATED FOOD.**

**FACILITIES - AUTHORIZED REGISTERED FACILITIES  
ARE LISTED**

**HOWEVER**

**CONSUMER ORGANIZATIONS ARE VERY  
CRITICAL OF FOOD IRRADIATION.**

**THEY BELIEVE THAT IF PROPER HYGIENE  
PRACTICES ARE FOLLOWED,  
THE TECHNOLOGY IS NEITHER  
TECHNOLOGICALLY WORTHWHILE NOR  
NECESSARY.**

# **RECOMMENDATION OF THE ECONOMIC AND SOCIAL COMMITTEE OF THE EU**

**“IN VIEW OF THE CONCERNS HARBORED BY  
SOME SECTIONS OF THE POPULATION,  
IRRADIATION SHOULD BE  
HANDLED CAUTIOUSLY “**



# **DEVELOPMENTS IN THE EU ....**

**THE EU HAS BECOME A RESTRICTED MARKET**

**CURRENTLY IT ALLOWS ONLY THE IRRADIATION  
OF DRIED SPICES, HERBS AND VEGETABLE  
SEASONINGS**

**SOME COUNTRIES LIKE DENMARK WHICH  
WAS AUTHORIZED TO IRRADIATE FOODS UNDER  
PREVIOUS NATIONAL AUTHORIZATIONS AGREED TO  
STOP.**

**NEW COUNTRIES JOINING THE EU ARE ALSO CLOSING  
THEIR WORK ON THIS TECHNOLOGY  
(20<sup>TH</sup> ICGI MEETING NOVEMBER 2003)**

# **LESSONS FROM THE EU SITUATION REGULATIONS AND CONSUMER ACCEPTANCE**

**1. REGULATIONS SHOULD BE SCIENCE BASED  
TO BE WORKEABLE.**

**2. STRICTLY SCIENCE BASED REGULATIONS  
THAT ARE NOT ACCEPTABLE TO THE PUBLIC  
WILL ALSO NOT BE WORKEABLE**

# **LESSONS FROM THE EU SITUATION REGULATIONS AND CONSUMER ACCEPTANCE**

**3. WHERE RECOGNITION OF BENEFIT TO CONSUMERS IS WEAK, ACCEPTANCE WILL BE WEAK.**

**THE SCIENTIFIC BASIS FOR FOOD IRRADIATION REGULATIONS IS EXTENSIVE. BUT RECOGNITION OF CONSUMER BENEFITS IS POOR.**

**4. BENEFITS TO CONSUMER VARIES BETWEEN COUNTRIES AND MAKES HARMONIZATION OF REGULATIONS AND UNIFORM ACCEPTANCE OF THE TECHNOLOGY DIFFICULT.**

# **LESSONS FROM THE EU SITUATION REGULATIONS AND CONSUMER ACCEPTANCE**

**5. DIFFICULTY IN CONSUMER ACCEPTANCE AND  
REGULATIONS ALSO ARISE  
BECAUSE IRRADIATED FOODS IS  
WITHOUT AN EXTENSIVE HISTORY OF USE  
FOR HUMAN CONSUMPTION**

**IT THEREFORE BECOMES  
POSSIBLE TO ARGUE THAT RISKS NOT YET  
IDENTIFIED BY SCIENCE EXISTS.**

**IT IS A LEGITIMATE ARGUMENT BUT  
OUTSIDE A SCIENTIFIC RESPONSE.**

# **DEVELOPMENTS IN INTERNATIONAL STANDARDIZATION**

**CODEX GENERAL STANDARD FOR  
IRRADIATED FOOD 2003**

**CODEX RECOMMENDED INTERNATIONAL  
CODE OF PRACTICE FOR RADIATION  
PROCESSING OF FOOD 2003**

**GUIDELINES FOR THE USE OF IRRADIATION  
AS A PHYTOSANITARY MEASURE (2003)**

# **CODEX AND IPPC**

**CODEX ALIMENTARIUS COMMISSION -  
AN INTERNATIONAL STANDARDS  
MAKING BODY FOR THE PROTECTION OF  
CONSUMER HEALTH AND FAIR TRADE.  
ORGANIZED BY FAO /WHO, HAS 169 MEMBERS**

**IPPC – AN INTERNATIONAL STANDARDS MAKING  
BODY PREPARING STANDARDS AND GUIDELINES  
FOR THE PROTECTION OF PLANT HEALTH.  
ORGANIZED UNDER FAO.**

**STANDARDS OF CODEX AND THE IPPC ARE  
RECOGNIZED BY THE  
WORLD TRADE ORGANIZATION.**

# **ORIGINS OF THE CODEX STANDARDS**

**THE STANDARDS WERE DRAFTED  
BY THE CODEX COMMITTEE ON  
FOOD ADDITIVES AND CONTAMINANTS (CCFAC),**

**TECHNICAL ADVISE WAS PROVIDED AS OBSERVER,  
BY THE INTERNATIONAL ATOMIC ENERGY AGENCY.**

# **ORIGINS OF THE CODEX STANDARDS**

**THE CODEX GENERAL STANDARD FOR IRRADIATED FOOD OF 2003 WAS MODIFIED FROM THE STANDARD OF 1983 OF THE SAME NAME.**

**THE CODEX RECOMMENDED INTERNATIONAL CODE OF PRACTICE FOR THE RADIATION PROCESSING OF FOOD WAS NEW WORK AT CCFAC**

**WORK COMMENCED IN THE YEAR 1999 FOLLOWING PUBLICATION OF THE RESULTS OF THE JOINT FAO/WHO/IAEA STUDY GROUP ON HIGH DOSE IRRADIATION**



# HIGH-DOSE IRRADIATION: WHOLESOMENESS OF FOOD IRRADIATED WITH DOSES ABOVE 10 kGy

Report of a  
Joint FAO/IAEA/WHO Study Group



## WORLD HEALTH ORGANIZATION

- Food irradiated to any dose appropriate to achieve the intended technological objective is both safe to consume and nutritionally adequate.
- This conclusion is based on extensive scientific evidence.

# **MODIFICATION OF THE CODEX GENERAL STANDARD**

**THE 1983 STANDARD STATED THE FF:**

***“THE OVERALL AVERAGE DOSE ABSORBED BY A FOOD  
SUBJECTED TO RADIATION PROCESSING  
SHOULD NOT EXCEED 10 kGy.”***

**BASIS:**

**MOST OF THE WORK ON SAFETY OF IRRADIATED FOOD  
IN 1983 WAS CARRIED OUT AT 10 kGy.**

**AMONG OBJECTIVES FOR MODIFICATION OF STD:**

**THE 10 kGy LIMIT WAS NO LONGER  
NECESSARY FOLLOWING THE CONCLUSIONS  
OF THE FAO/WHO/IAEA STUDY GROUP OF 1997 .**

# **MODIFICATION OF THE CODEX GENERAL STANDARD**

**1999 STANDARD WAS INTRODUCED**

**2000 PROGRESS ON THE MODIFICATION WAS STOPPED FOLLOWING UNPUBLISHED REPORTS THAT AN EC FUNDED STUDY SHOWED THAT 2 ALKYL CYCLOBUTANONES FORMED FROM IRRADIATION OF FAT CONTAINING FOODS WERE TOXIC.**

## **QUESTIONS RAISED:**

**1) IDENTITY AND PURITY OF 2-DCB USED FOR THE TEST**

**2) NON-USE BY AUTHORS OF TEST PROCEDURES WIDELY ACCEPTED FOR ASSESSING FOOD SAFETY**

**2001 NEW STUDY WAS CONDUCTED BUT RESPONDED ONLY TO # 1) OF TWO QUESTIONS RAISED ABOVE. NO PROGRESS AT CCFAC PENDING REVIEW BY THE EC SCIENTIFIC COMMITTEE ON FOOD.**

# **DESCRIPTION OF STUDY**

**EC FUNDED STUDY OF BOURNO D, DELINCEE H., et.al 2001.**

**TO EVALUATE THE TOXICOLOGICAL PROPERTIES OF  
2-ALKYLCYCLOBUTANONES (2-ACB)**

**2-ACB'S ARISE FROM IRRADIATION OF FAT CONTAINING  
FOODS. WERE CONSIDERED POSSIBLE MARKERS  
FOR THESE FOODS SINCE 1992.**

**THE PROJECT DEVELOPED METHODS OF SYNTHESIS**

**TO PREPARE STANDARDS FOR GC-MS ANALYSIS**

**TO PREPARE ADEQUATE AMOUNTS OF PURE  
SUBSTANCES TO CARRY OUT TOXICOLOGICAL TESTS**

**STATEMENT OF THE  
EC SCIENTIFIC COMMITTEE ON FOOD  
JULY 3, 2002**

**THE ADVERSE EFFECTS NOTED REFERS ALMOST  
ENTIRELY TO *IN VITRO* STUDIES.**

**GENOTOXICITY OF 2-ACB'S  
HAS NOT BEEN ESTABLISHED BY THE STANDARD  
GENOTOXICITY ASSAYS.**

**IT IS NOT APPROPRIATE ON THE BASIS OF THESE  
RESULTS TO MAKE A RISK ASSESSMENT FOR  
HUMAN HEALTH ASSOCIATED WITH THE  
CONSUMPTION OF 2-ACB'S IN  
IRRADIATED FAT CONTAINING FOODS**

**STATEMENT OF THE  
EC SCIENTIFIC COMMITTEE ON FOOD  
JULY 3, 2002**

**“REASSURANCE AS TO THE SAFETY OF  
FAT CONTAINING FOODS CAN BE BASED ON THE  
RESULTS OF A LARGE NUMBER OF FEEDING TESTS  
CARRIED OUT WITH IRRADIATED FOODS WHICH  
FORMED THE BASIS OF THE WHOLESOMENESS  
ASSESSMENT OF WHO/FAO/IAEA”**

**(WHO 1981. TECHNICAL REPORT SERIES NO 659  
WHOLESOMENESS OF IRRADIATED FOOD.  
REPORT OF A JOINT FAO/WHO/IAEA EXPERT COMMITTEE)**

**ABOVE REFERENCE IS NOT THE SAME AS  
WHO 1999. TECHNICAL REPORT SERIES 890. REPORT OF  
A JOINT FAO/WHO/IAEA STUDY GROUP ON THE  
WHOLESOMENESS OF FOOD IRRADIATED ABOVE 10 kGy.**

# **STATEMENT OF WHO (NOV 2002)**

**1997 STUDY GROUP WAS AWARE OF CONCERNS ABOUT 2-DODECYLCYCLOBUTANONES (2-DCB'S) BUT QUESTIONED RELIABILITY OF STUDIES DUE TO EXPERIMENTAL DEFICIENCIES INCLUDING;**

**1) SYNTHESIZED 2-DCB HANDLED UNDER CONDITIONS THAT MAY HAVE PROMOTED DECOMPOSITION. ACTUAL IDENTITY OF THE COMPOUNDS USED WERE NOT VERIFIED BEFORE THE TESTS.**

**2) THE *COMET* ASSAY IS NOT ACCEPTED AS A BASIS FOR ASSESSING GENOTOXICITY AT THIS TIME.**

**3) THE NUMBER OF TEST ANIMALS WAS LIMITED TO 6 THE NUMBER OF 2-DCB DOSE LEVELS WAS LIMITED TO 2**

**4) THE DISTRIBUTION ERRORS BASED ON THESE MEASUREMENTS WAS NOT STATISTICALLY CONSISTENT.**

# **STATEMENT OF WHO (2002) CONT'D**

**1997 STUDY GROUP ON HIGH DOSE IRRADIATION CONSIDERED THAT SAFETY OF FAT CONTAINING FOODS CONTAINING 2-DCB'S, HAD BEEN DEMONSTRATED BY STUDIES CONDUCTED BY RALTECH LABORATORY IN 1970**

**THE STUDIES REPORTED THAT CHICKEN IRRADIATED AT HIGH DOSES AND USING CHRONIC FEEDING STUDIES, TERATOLOGY STUDIES AND A SERIES OF IN VITRO TESTS SHOWED NO EVIDENCE OF ADVERSE EFFECTS DUE TO IRRADIATION.**

**CHICKEN IRRADIATED AT 50 kGy AT -30 C WOULD HAVE ABOUT 1.5 UG OF 2-DCB**



# **STATEMENT OF WHO (2002) CONT'D**

**NEW STUDIES CARRIED OUT IN 2001 STILL INCLUDED THE QUESTIONABLE COMET ASSAY AS WELL AS OTHER TESTS.**

**NEW STUDIES FAILED TO INCLUDE TEST PROCEDURES ACCEPTED FOR ASSESSING FOOD SAFETY WIDELY**

# **STATEMENT OF WHO (2002) CONT'D**

**RECENT REPORT (HORVATOVICH, P et.al. JOURNAL OF FOOD PROTECTION 64:10 2002) RATS WERE FED 1 MG 2-TETRADECYL OR 2-TETRADECENYL-ALKYLCYCLOBUTANONE IN DRINKING WATER. THE STUDY SHOWED THAT AT THE END OF 4 MONTHS;**

**BODY WEIGHT GAIN WAS THE SAME FOR TREATED AND CONTROL RATS.**

**ONLY A VERY SMALL AMOUNT OF THE INGESTED DOSE WAS IN THE ADIPOSE TISSUE.**

**ONLY SMALL AMOUNTS WERE IN FECAL MATTER (0.1-0.2%). COMPOUNDS APPEAR TO BE RAPIDLY METABOLIZED IN RATS.**

**STUDY PROVIDES ASSURANCE THAT THESE COMPUNDS ARE NOT OVERTLY TOXIC, DO NOT ACCUMULATE IN ADIPOSE TISSUE AND ARE METABOLIZED RAPIDLY.**

# **STATEMENT OF WHO (2002) CONT'D**

**IN VIEW OF THE GROWING BODY OF EVIDENCE INCLUDING  
NEGATIVE AMES TEST WITH 2-DCB  
THAT THESE COMPOUNDS POSE NO HEALTH RISK TO  
CONSUMERS**

**WHO HAS NO BASIS TO QUESTION THE CONCLUSIONS  
OF SEVERAL JOINT FAO/IAEA/WHO EXPERT GROUPS**

**AS WELL AS MANY NATIONAL EXPERT ADVISORY BODIES  
THAT IRRADIATED FOODS ARE SAFE AND  
NUTRITIONALLY ADEQUATE.**

# **...MODIFICATION OF THE CODEX GENERAL STANDARD...CONT'D**

**MARCH 2001**

**NO PROGRESS AT CCFAC  
EU RECOMMENDED WAITING FOR  
STATEMENT OF EC SCF**

**MARCH 2002**

**CCFAC CREATES A DRAFTING  
GROUP FOR THE MODIFICATION OF  
THE GENERAL STANDARD**

**JULY 2002**

**STATEMENT OF THE EC  
SCIENTIFIC COMMITTEE ON FOOD**

**NOV 2002**

**STATEMENT OF WHO**

**MARCH 2003**

**CCFAC ADOPTS THE STANDARD**

**JUNE 2003**

**CODEX COMMISSIO ADOPTS**

# **THE CODEX GENERAL STANDARD FOR IRRADIATED FOOD 2003**

**MODIFIED FROM THE CODEX GENERAL  
STANDARD FOR IRRADIATED FOOD OF 1983**

**IT PROVIDES GUIDANCE ON**

**GENERAL REQUIREMENTS**

**HYGIENE OF IRRADIATED FOODS**

**TECHNOLOGICAL REQUIREMENTS**

**RE-IRRADIATION**

**LABELLING**

# **THE CODEX GENERAL STANDARD FOR IRRADIATED FOOD 2003**

**UNLIKE THE 1983 STANDARD IT ALLOWS  
IRRADIATION OF FOODS ABOVE 10 kGy  
UNDER CERTAIN CONDITIONS**

**I.E WHEN NECESSARY, TO ACHIEVE A LEGITIMATE  
TECHNOLOGICAL PURPOSE**

**SCIENTIFIC BASIS:**

**THE FINDINGS OF THE FAO/WHO/IAEA STUDY GROUP  
ON HIGH DOSE IRRADIATION**

**THE CODEX GENERAL STANDARD  
FOR IRRADIATED FOOD 2003  
EXCERPT FROM SECTION 2.2 ABSORBED DOSE**

**FOR THE IRRADIATION OF ANY FOOD,**

**THE MINIMUM ABSORBED DOSE SHOULD BE  
SUFFICIENT TO ACHIEVE THE  
TECHNOLOGICAL PURPOSE**

**THE MAXIMUM ABSORBED  
DOSE SHOULD BE LESS THAN THAT WHICH WOULD  
COMPROMISE CONSUMER SAFETY, WHOLESOMENESS  
OR WOULD ADVERSELY AFFECT STRUCTURAL INTEGRITY,  
FUNCTIONAL PROPERTIES OR SENSORY ATTRIBUTES.**

**THE MAXIMUM ABSORBED DOSE DELIVERED TO A FOOD  
SHOULD NOT EXCEED 10 kGy EXCEPT WHEN NECESSARY  
TO ACHIEVE A LEGITIMATE TECHNOLOGICAL PURPOSE.**

# **THE CODEX GENERAL STANDARD FOR IRRADIATED FOOD 2003**

## **A NEW SECTION 6.4 ON POST IRRADIATION VERIFICATION**

**WHEN REQUIRED AND WHERE APPLICABLE, ANALYTICAL METHODS FOR THE DETECTION OF IRRADIATED FOODS MAY BE USED TO ENFORCE AUTHORIZATION AND LABELLING REQUIREMENTS. THE ANALYTICAL METHODS USED SHOULD BE THOSE ADOPTED BY THE CODEX COMMISSION.**



# **THE CODEX GENERAL STANDARD FOR IRRADIATED FOOD 2003**

## **REPRESENTS**

**A DELICATE ACCOMMODATION OF CONSUMER  
CONCERNS IN THE IMPLEMENTATION OF  
A NEW TECHNOLOGY VS CURRENT SCIENTIFIC  
EVIDENCE OF SAFETY.**

## **REMAINING WORK AT CODEX**

**ANALYTICAL METHODS OF DETECTION  
APPLICABLE FOR USE BY DEVELOPING COUNTRIES  
REMAIN TO BE DEVELOPED TO FACILITATE  
TRADE**

**REVISION OF THE OPINION OF THE  
SCIENTIFIC COMMITTEE ON FOOD  
ON THE IRRADIATION OF FOOD**

**APRIL 24, 2003 SCF/CS/NF/IRR24 FINAL**

**AS THE TOXICOLOGICAL AND NUTRITIONAL DATABASE  
RELATING TO FOODS IRRADIATED BELOW 10 kGy  
HAS NOT BEEN ENLARGED TO ANY SIGNIFICANT DEGREE  
SINCE THE 1980 FAO/IAEA/WHO AND 1986 SCF REPORTS.**

**...IT IS NOT POSSIBLE TO DEVIATE FROM ITS EARLIER  
POSITION THAT ONLY THOSE SPECIFIC IRRADIATION  
DOSES AND FOOD CLASSES SHOULD BE ENDORSED  
FOR WHICH ADEQUATE TOXICOLOGICAL, NUTRITIONAL,  
MICROBIOLOGICAL AND TECHNICAL DATA ARE  
AVAILABLE.**

# **REVISION OF THE OPINION OF THE SCIENTIFIC COMMITTEE ON FOOD ON THE IRRADIATION OF FOOD**

**THE HUMAN CLINICAL STUDIES WITH IRRADIATED FOODS,  
ALTHOUGH THEY DID NOT SHOW ANY ADVERSE EFFECTS,  
DO NOT PROVIDE A SUFFICIENTLY WIDE DATABASE TO  
SUPPORT A GENERAL EXTENSION OF IRRADIATION WITH  
DOSES UP TO 10 kGy**

**THE ONLY TECHNOLOGICAL NEED RECOGNISED  
WOULD BE THE DECONTAMINATION OF  
SPICES, DRIED HERBS AND VEGETABLE SEASONINGS  
WHERE DOSES UP TO 30 kGy MAY BE NEEDED.**

# **THE CODEX RECOMMENDED INTERNATIONAL CODE OF PRACTICE FOR THE RADIATION PROCESSING OF FOOD 2003**

**REPRESENTS A NEW VERSION OF WHAT WAS ORIGINALLY “THE (CODEX) RECOMMENDED INTERNATIONAL CODE OF PRACTICE FOR THE OPERATION OF IRRADIATION FACILITIES USED FOR THE TREATMENT OF FOODS. “**

**THE NEW CODE EMPHASIZES THE FOOD SAFETY ASPECTS AND INCLUDES PRACTICE OF HACCP AS IN THE CODEX RECOMMENDED INTERNATIONAL CODE OF PRACTICE-GENERAL PRINCIPLES OF FOOD HYGIENE.**

**THE OLD CODE EMPHASIZED THE OPERATION OF IRRADIATION FACILITIES.**

# **FINAL STATEMENT**

**INTERNATIONAL STANDARDS  
WILL HOPEFULLY INCREASE  
THE VISIBILITY OF IRRADIATED  
FOODS IN THE MARKET**

**AND BRIG ABOUT CONSUMER  
AWARENESS THAT FOOD IRRADIATION  
IS A BENEFICIAL TECHNOLOGY**

**IT CAN MAKE FOOD SAFER  
AND WHERE APPROPRIATE,  
REDUCE FOOD LOSSES.**

# **FINAL STATEMENT CONT'D**

**WHILE THE SCIENTIFIC DATABASE ON THE SAFETY OF THE TECHNOLOGY IS EXTENSIVE, BEING A NEW FOOD PROCESS, CONSUMER ACCEPTANCE OF FOOD IRRADIATION CAN TAKE PLACE ONLY SLOWLY.**

**THE CONSUMER HAS TO BE CONVINCED THAT THE BENEFITS OUTWEIGH UNKNOWN RISKS...**

**....RISKS WHICH WE ACTUALLY LIVE WITH EVERYDAY**

**THANK YOU**

**JAPAN RESEARCH ASSOCIATION**

**FOR FOOD IRRADIATION**