अखिल भारतीय आयुर्विज्ञान संस्थान, देवघर
ALL INDIA INSTITUTE OF MEDICAL SCIENCES, DEOGHAR
(स्वास्थ्य और परिवार कल्याण मंत्रालय के अंतर्गत राष्ट्रीय महत्व की संस्थान)
(INSTITUTE OF NATIONAL IMPORTANCE UNDER MINISTRY OF HEALTH AND FAMILY WELFARE
Ramsagar, Devipur, Deoghar, (Jharkhand) - 814152
रामसागर, देवीपुर, देवघर, (झारखंड) - ८१४१४२
आरोग्यम् परमं सुखम्

Invitation of quotation

for

Allotment of space for setting up of Water ATM (Qty 3 No.) at AIIMS, Devipur, Deoghar

Reference No.: AIIMS/Deoghar/Water ATM/ 2023-24/Engineering

Date of Issue: 03.04.2024

Last Date of Submission: 10.04.2024 at 05:00 PM.

Address:

All India Institute of Medical Sciences, Deoghar

Devipur, Deoghar: 814152, Jharkhand

Email: office.aiimsdeoghar@gmail.com

Reference no: AIIMS/Deoghar/Water ATM/ 2024/Engineering

Invitation of quotation for allotment of space for setting up of Water ATM (Qty 3 No.) at AIIMS, Devipur, Deoghar.

Quotations are invited on behalf of AIIMS, Deoghar for allotment of space for setting up of Water ATM (Qty. 4 No.) required for the Institute as per terms & conditions mentioned below & Annexure - I. The filled quotations along with the entire required document submitted on or before **10.04.2024 at 05:00 PM**.

Name of the facility with its location	Minimum Reserve Price
Allotment of space for setting up of Water ATM counter at AIIMS Deoghar	Rs 65/- per Sq feet

1. General Terms & Conditions:

a) Location: Space for setting up Water ATM will be provided at following locations of AIIMS, Doghar
   (i) At Block D
   (ii) At Block A - IPD
   (iii) At Night Shelter
   (iv) At Ayush Block
b) Rates must be quoted in Indian rupees.
c) Rates must be inclusive of all charges (excluding taxes etc.).
d) The **rates quoted must be valid for 90 days minimum from the date of opening of the quotation** and silence of any tendered on this issue shall be treated as agreed with this condition.
e) **Total cost/amount will be taken in consideration for H1.**
f) Rate of water dispense: Rs 5/- per Liter. Any upward rate revision will require approval of AIIMS competent authority.
g) The firm / agency may satisfy the following conditions and **attach self-attested copy of the same with the quotation:**
   - The firm shall have valid GST / Other taxes and IT PAN.
   - The firm should not be black listed by any Government agency/Department.
   - Performance report of any government institute/organization wherein such Water ATM is installed.
   - Acceptance to Annexure - I
h) Quotations qualified by such vague and indefinite expressions such as “subject to prior confirmation”, “subject to immediate acceptance” etc. will be treated as vague offers and it will be rejected accordingly. Any conditional quotation shall be rejected summarily.
i) **Liquidated Damage**: - If the supplier fails to organize event/ deliver the material on or before the stipulated date, then a penalty at the rate of 0.5 % per week of the total order value shall be levied subject to maximum of 10% of the total order value.
j) **Disputes:** -In the event of any dispute or disagreement arising between the contractors and any other department of AIIMS Deoghar with regards to the interpretation of “Terms & Conditions” of this enquiry, the same shall be referred to arbitrator appointed by The Executive Director, AIIMS, Deoghar, whose decision will be final and binding upon the contractor.
k) AIIMS, Deoghar reserves the right to reject any quotation or part or the whole of inviting quotation process without assigning any reason. Decision of The Executive Director, AIIMS, Deoghar, will be final in this regard.
l) The envelope containing quotation should be sealed with TAPE on both sides. The quotation received after due date will not be accepted.

1. Background:

AIIMS Deoghar hereby wishes to invite application to set up water ATM at allotted space for providing access to safe drinking water including Operation and Maintenance of the ATMs for three years.

2. SCOPE OF WORK FOR BIDDER

The bidders will be responsible for:

2.1 Supplying, installing, operating and maintaining of Water ATMs and vending of water from Water ATMs along with water storage tanks of Stainless Steel (minimum Grade 304) and submitting monthly test report of output water to the Engineer-in-Charge. Being the service is required for visitors; the space will be provided with concessional rate for three years.

2.2 Making Power connection at Water ATMs and all electrical fittings up to the power meter of (AIIMS, Deoghar); power connection & external electrification charges will be borne by the supplier and will be charged on Commercial Rates.

2.3 Quality control and monitoring systems to be incorporated at each ATM location as per the following:

EMBEDDED DEVICE FOR AUTOMATION FOR FOLLOWING PURPOSES

Real time Water Quality Monitoring to be displayed on machine

i. TDS level of water

ii. Temperature of water

iii. Hardness pH values of water

2.4. Disposal of wastewater to AIIMS DEOGHAR sewerage system.

2.5 The water before being dispensed to the public shall be treated with suitable filtration process to meet BIS 14543 standard at all times.

2.6 Water ATM will be constructed as per the layout approved by the AIIMS Deoghar

2.7 Water ATM should be equipped with provision for chilled water (water with temperature around 15 degree Celsius during summers.

2.8 No commercial advertisements will be allowed at any Water ATM unit.

3.0 **General Requirements**:

3.1 Operational Time – 8 AM to 8 PM every day, which may be amended in consultation with AIIMS Deoghar

3.2 Unit Dimension: Approx area for water ATM: 35 to 50 Sq. feet,

3.3 The ATM shall have the provisions for Float valve for overflow control

4.0 **INSTRUCTIONS FOR BIDDERS**:

4.1 The Supplier is advised to analyse the AIIMS Deoghar potable water of requisite sample size on their own before quoting their rates.

4.2 No extra claim will be entertained after the allotment of the work on this account.

4.3 The Supplier should analyse the water sample for all parameters as per BIS 14543 norms in a weekly manner or as and when required. Supplier shall maintain proper record in this regard.

4.4 The Attendant of Supplier shall be available at the Water ATM during the operation time. A LED/LCD digital screen of at least 14 inch diagonal showing 4 key parameters of IS 14543:2004 standards namely pH, hardness, TDS & temperature on a real time basis in an interval of 2-5 minutes.

4.5 The maintenance of pipelines etc. from point of connection onwards to the Water ATMs shall be responsibility of Supplier during the concession period.

4.6 Making connection for raw water:- The Supplier shall be responsible for executing works for making connection for Water ATMs from the source provided by the AIIMS DEOGHAR including cost of all material and labour etc. up to 30 meters distance. The cost beyond 30 meters will be borne by the AIIMS DEOGHAR.

4.7 The cost of filtration process at each ATM, to ensure quality of water as per IS 14543:2004 standard shall be the responsibility of the Supplier. For ready reference; IS 14543: 2004 is enclosed herewith.

4.8 Disposal of waste generated at each Water ATM:- The disposal of waste generated at each ATM shall be disposed by the Supplier at his own cost to the nearest AIIMS DEOGHAR sewerage system.

4.9 The Supplier shall install the required equipment and maintain the same for a period of three years from the date of commissioning of water ATMs, as per the conditions prescribed in this document, and in the time frame prescribed at his own cost.

4.10 The Supplier will depute duly trained Operators at each water ATM. The Supplier shall ensure routine inspection of the equipment by the equipment supplier.

4.11 Supplier should ensure that all the Water ATM are working all the time and annual repair/maintenance etc. shall be carried out periodically at his own cost.

4.12 To maintain premises clean, safe hygienic and risk free in and around the Water ATM (approx. Two meter radii) is the responsibility of Supplier.

4.13 Water & Electric supplied through connection by the AIIMS DEOGHAR (if any), will be charged from Supplier on Commercial rates applicable from time to time. The respective meters are to be installed by the supplier.

4.14 AIIMS DEOGHAR has reserve the right to inspect any ATM at any time.

4.15 AIIMS DEOGHAR has right to take sample of water at any time.

4.16 The water storage capacity at each ATM should be minimum 500 Litre which can be increased as per the requirement.

4.17 Supplier shall ensure that the technology chosen is (a) Appropriate to the site and ground situation (b) Has a precedent for use in a project of similar nature and size (c) is supported by the technology/service provider for design, supply, implementation and ongoing maintenance (d) Addresses all issues of safety, including fire safety, operational safety, and environmental safety

4.18 DELIVERY/COMMISSIONING The commissioning of all the water ATMs is 1 month from the date of the confirmed Letter of intent or handing over of site whichever is later.

4.19 Penalty In case of Non-performance In case of non-performance of more than 3 hours in a particular day between the operating hours, 1 day non-operation will be considered and penalty will be levied. In case the quality of water is not as per IS 14543:2004 standard, the ATM operation of dispensing water should be stopped immediately. AIIMS DEOGHAR will impose a penalty of Rs 1000 for each such event at the Water ATM concerned.

[Letter head of firm]

PRICE BID FORM

To,
Procurement Officer,
AIIMS, Deoghar,
Jharkhand - 814152

Dear Sir,

I/We ..... am/are submitting the quotation for "Allotment of space for setting up of Water ATM (Qty 3 No.) as per Annexure –I AT AIIMS, DEVIPUR, DEOGHAR" against NIQ No. AIIMS/Deoghar/Water ATM/ 2023-24/Engineering DUE ON 10.04.2024 at 05.00 PM**" for** AIIMS Deoghar.

1. I/We have thoroughly examined, understood and accepted terms & conditions given in the enquiry document, failing which my quotation will be rejected out rightly.
2. I/We hereby offer to arrange the event and supply on following rates:

Note:-

- The bidder must quoted their quotation only in above said format on the letter of firm otherwise quotation will be REJECTED.

Date:

(Name):

Place:

Name of Firm/Company/Agency:

GSTIN No.:

Phone No:

Email:

(Signature of Authorized Person) _____

Seal: _____

IS 14543 (2004): Packaged Drinking Water (Other than Packaged Natural Mineral Water) [FAD 14: Drinks and Carbonated Beverages]

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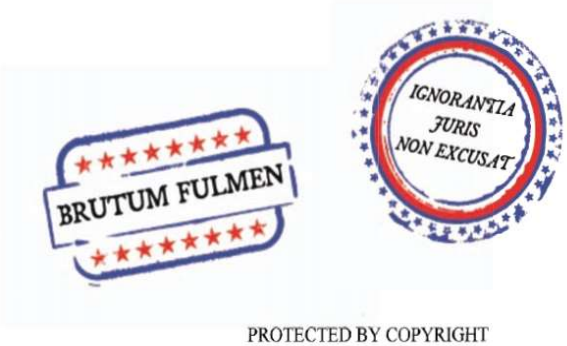

भारतीय मानक

पैकेजबन्द पेय जल (पैकेजबन्द : प्राकृतिक मिनरल जल के अलावा) — विशिष्टि

(पहला पुनरीक्षण)

Indian Standard

PACKAGED DRINKING WATER (OTHER THAN PACKAGED NATURAL MINERAL WATER) — SPECIFICATION

(First Revision)

Second Reprint AUGUST 2004

ICS 13.060.20

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 2004

Price Group 8

AMENDMENT NO. 1 JULY 2004
TO
IS 14543 : 2004 PACKAGED DRINKING WATER (OTHER THAN PACKAGED NATURAL MINERAL WATER) — SPECIFICATION

(First Revision)

(*Page* 2, *clause* **5.2,** Substitute the following for the existing clause:

'**5.2** Packaged drinking water shall be clear without any sediments, suspended particles and extraneous matter. It shall also comply with the requirements given in Tables 1, 2, 3 and 4.'

(FAD 14)

Printed at Simco Printing Press, Delhi

AMENDMENT NO. 2 JULY 2005
TO

IS 14543 : 2004 PACKAGED DRINKING WATER (OTHER THAN PACKAGED NATURAL MINERAL WATER) — SPECIFICATION

(First Revision)

(*Foreword, para* 3, *line* 5) — Substitute 'seven' *for* 'six'.

(*Page* 1, *clause* **3.2**, *line* 19) — Insert 'be food grade quality and' after the word 'shall'.

(*Page* 1, *clause* **5.1**) — Add the following after the title '**Microbiological Requirements**':

'Packaged drinking water shall comply with the requirements given in clauses **5.1.1** to **5.1.9**.'

[*Page* 2, *clause* **5.2** (*see also Amendment No.* 1)] — Substitute the following for the existing text:

'**5.2** Packaged drinking water shall also comply with the requirements given in Tables 1, 2, 3 and 4.'

[*Page* 2, *Table* 1, *Sl No.* (iii), *col* 3] — Substitute 'Agreeable (Action Tendency Scale a) or b) or c) ' *for* 'do'

(*Page* 3, *Table* 4) — Insert the following note at the end of the table:

'NOTE — In case of non-conformity of radio active residues, the source of water shall be abandoned and water shall be recalled immediately.'

(*Page* 3, *clause* **5.3**, *line* 1) — Substitute 'In the packaged drinking water, the' *for* 'The'.

(*Page* 3, *clause* **6**, *para* 2) — Substitute the following for the existing text:

'All packaging materials of plastic origin shall pass the overall migration and colour migration limits as laid down in the relevant Indian Standards for products for respective packaging materials when tested as per method given in IS 9845.'

(*Page* 10, *clause* **B-8.4.1**, *line* 9) — Substitute 'filling' *for* 'tilling'.

(*Page* 11 *Annex* C, *Title, line* 2) — Insert '**DRINKING**' in between the words '**PACKAGED**' and '**WATER**'.

[*Page* 14, *Annex* C, *Sl No.* H(ii), *line* 2] — Substitute 'foot' *for* 'food'.

[*Page* 14, *Annex* C, *Sl No.* H(iv), *line* 3] — Substitute 'packaged drinking water' *for* 'food'.

[*Page* 15, *Annex* C, *Sl No.* J(iv), *line* 1] — Substitute 'infectious' *for* 'infections'.

(FAD 14)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 3 DECEMBER 2005
TO
IS 14543 : 2004 PACKAGED DRINKING WATER (OTHER THAN PACKAGED NATURAL MINERAL WATER) — SPECIFICATION

(First Revision)

(*Page* 1, *subclause* **5.1.6**) — Substitute the following for the existing:

'**5.1.6** *Aerobic Microbial Count*

The total viable colony count shall not exceed 100/ml at 20 to 22°C in 72 h and 20/ml at 37°C in 24 h when tested in accordance with the methods given in IS 5402.'

[*Page* 3, *clause* **6**, *first para, line* 10 (*see also Amendment No.* 2)] — Insert 'or polyethylene flexible pouches conforming to IS 15609.' after the word 'water':

(*Page* 3, *clause* **6**, *para* 1) — Insert following at the end:

'Guidelines for handling of polyethylene flexible pouches is given in Annex E.'

(*Page* 5, *Annex* A) — Insert the following at the end :

'IS No.	*Title*
15609 : 2005	Polyethylene flexible pouches for the packing of natural mineral water and packaged drinking water – Specification'

(*Page* 16, *Annex* D) Insert the following new Annex E after Annex D and rename the existing 'Annex E' as 'Annex F':

ANNEX E
(*Clause* 6)

Guidelines for Handling of Polyethylene Flexible Film Meant for Packing of Packaged Drinking Water in Pouches

E-1 Polyethylene flexible film meant for packing of Packaged Drinking Water in pouches should have suitable sturdy and dust proof outer packing to prevent contamination during transport, storage and handling. The supplier must be instructed to apply such packing immediately after the film manufacture. Such outer packaging must remain intact till the final loading of the film on the pouch filling machine. Care should however be taken to clean such outer packaging and render the same dust-free before the same is carried into the filling room.

E-2 Printing of the film must be done in such a way that the printing material does not interfere with the final product.

E-3 Such film must be stored in dry, cool and dust-free environment away from strong smelling substances, chemicals, cleaning material etc. It will be ideal to have separate store rooms exclusive for packaging material.

E-4 While handling the film the personnel should adhere to the following basic hygiene precautions:

a) Finger nails of personnel should be trimmed close and well so that no unhygienic substances are found below the nails.
b) Hands should be cleaned with disinfecting soap and dried, preferably gloved.
c) Personnel should wear head cover and mask while handling the film.

E-5 The pouch filling machine must have suitable means to sterilize the film prior to forming the pouch. UV sterilization may be considered taking into account the following aspects:

a) The length and intensity of the lamps must be suitable for sterilizing the film on the active surface, that is, the surface that will be in contact with the product and the speed of the machine. The equipment supplier's certificate to that effect must be maintained for record.

b) The UV lamp supplier must certify as to the expected life in number of hours. The filling machine should have a mechanism to monitor the number of hours of usage, suitably interlocked with the rest of the equipment so that a reliable method to record the actual usage is available.

c) Partly used and unused film must be stored with all precautions in accordance with **E-3** above.

d) Guide-rods, etc, that may direct the film in the formation of the flexible packaging and other contact parts must be suitably sanitized with Hydrogen Peroxide before start of every filling operation and records of the same maintained.

E-6 Fumigation of the filling room with suitable agent is recommended.

E-7 Size of the secondary packaging must take into account that at the retail point the flexible packaged drinking water is often refrigerated and so the secondary packaging should be of appropriate size to facilitate refrigeration in the secondary packaging itself. This would shield the pouches from contaminations.

E-8 The following storage instructions must be issued to retailer/whole seller and all concerned in the supply chain:

a) Packaged Drinking Water in flexible packaging must be handled with care.

b) It should be stored away from sunlight and in a cool place.

c) It should be hygienically stored in a place away from chemicals, paints, pesticides and similar substances that can affect the product.

d) It should also be stored away from strong-smelling substances.

e) Chilling the product with commercially produced ice must be discouraged as it would expose the consumer to product with possible contamination from ice produced with unsafe water.

f) To check for any leakage, etc, before opening.

g) Instruments used for opening/cutting sachets should be kept exclusive for these pouches in a suitable place to avoid any contamination and should not be used for cutting or opening any other non-food product.

h) Consumer must be advised to use clean scissors to open sachet.

j) Product should not be consumed if any foreign material is found.

(FAD 14)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 4 AUGUST 2007
TO
IS 14543 : 2004 PACKAGED DRINKING WATER (OTHER THAN PACKAGED NATURAL MINERAL WATER) — SPECIFICATION

(First Revision)

(*Page* 1, *clause* **1**, *line* 2) — Substitute 'packaged drinking water' *for* 'drinking water'.

(*Page* 1, *clause* **4**, *line* 1) — Substitute 'Source water' *for* 'It'.

(*Page* 2, *clause* **5.1.10**) — Delete the clause along with note.

(*Page* 2, *clause* **5.1.9**) — Insert the following notes after the clause **5.1.9**:

'NOTE 1 - The membrane filtration technique outlined in IS 15188 may be used to pass the sample of water to be tested through membrane before the microbiological tests specified from **5.1.1** to **5.1.5** and **5.1.7** to **5.1.9** are carried out.

NOTE 2 - In case of dispute, the method indicated by '*'in **5.1.1** to **5.1.3** and **5.1.8** shall be reference method.'

[*Page* 2, *clause* **5.2** (*see also Amendments No.* 1 *and* 2)] — Substitute the following for the existing clause:

'**5.2** Packaged drinking water shall be clear without any sediments, suspended particles and extraneous matter. It shall also comply with the requirements given in Tables 1, 2, 3 and 4.'

[*Page* 2, *Table* 2, *Sl No.* (xx), *col* 4] — Substitute 'Clause 6 of IS 3025 (Part 39)' *for* 'IS 3025 (Part 39)'

(*Page* 3, *clause* **7.1**, *line* 2) — Insert '/' in between the words 'bottle' and 'container'.

(*Page* 6, *Annex* B, *clause* **B-5.3.1**) — Insert the following para 2 after existing para:

'One or more of the following should be installed on doors, hatches and other openings to the building to render opening pest proof:

a) Doors, self closing type;
b) Air curtains; and
c) Strip curtains.'

(*Page* 7, *clause* **B-5.3.7.4**) — Insert the following at the end:

'(*see also* clause **B-5.3.1**, para 2)'

(*Page* 7, *clause* **B-5.3.7.5**) — Insert the following at the end:

'(*see also* clause **B-5.3.1**, para 2)'

(*Page* 11, *clause* **B-8.9**) — Substitute the following for the existing:

'**B-8.9 Product Durability**

Product durability shall be declared on the container as per **7.1**(g). It shall be based on in-house shelf life study for which proper records be maintained confirming the declared product durability.'

[*Page* 12, *Annex* C, *Sl No.* **B**(vii)] — Delete Note.

(FAD 14)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 5 DECEMBER 2008
TO
1S 14543 : 2004 PACKAGED DRINKING WATER (OTHER THAN PACKAGED NATURAL MINERAL WATER) — SPECIFICATION

(First Revision)

[*Page* 1, *clause* **3.2** (*see also Amendment No.* 2)] — Substitute the following for the existing clause:

'**3.2 Packaged Drinking Water (Other than Packaged Natural Mineral Water)** — Packaged drinking water means water derived from surface water or underground water or sea water which is subjected to hereinunder specified treatments, namely, decantation, filtration, combination of filtration, aerations, filtration with membrane filter depth filter, cartridge filter, activated carbon filtration, demineralization, remineralization, reverse osmosis and packed after disinfecting the water to a level that shall not lead to any harmful contamination in the drinking water by means of chemical agents or physical methods to reduce the number of microorganisms to a level beyond scientifically accepted level for food safety or its suitability: Provided that sea water, before being subjected to the above treatments, shall be subjected to desalination and related processes. It shall be filled in sealed containers of various compositions, forms and capacities that is suitable for direct consumption without further treatment. In case remineralization is a part of the treatment process, the ingredients used shall be food grade quality and conform to the requirements of the *Prevention of Food Adulteration Act*, 1954 and the Rules framed thereunder.'

(FAD 14)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 6 JUNE 2010
TO
IS 14543 : 2004 PACKAGED DRINKING WATER (OTHER THAN PACKAGED NATURAL MINERAL WATER) — SPECIFICATION

(First Revision)

[*Page* 1, *clause* **3.2** (*see also Amendments No.* 2 *and* 5)] — Substitute the following for the existing last sentence:

'In case remineralization is a part of the treatment process, the ingredients used shall conform to food grade/pharma grade quality.'

[*Page* 2, *Table* 2, *Sl No.* (iv), *col* 4] — Substitute 'IS 3025 (Part 59)' *for* 'Clause **35** of IS 3025'.

[*Page* 2, *Table* 2, *Sl No.* (vii), *col* 4] — Substitute 'IS 3025 (Part 60)' *for* 'Clause **23** of IS 3025'.

[*Page* 4, *clause* **7.1**(h)] — Substitute 'Net quantity;' *for* 'Net volume;'.

(*Page* 4, *Annex* A) — Delete IS No. '3025 : 1964 Methods of sampling and test (physical and chemical) for water used in industry'.

(*Page* 4, *Annex* A) — Insert the following after '(Part 56) : 2003 Selenium (*first revision*)':

'(Part 59) : 2006 Manganese (*first revision*)
(Part 60) : 2008 Fluoride (*first revision*)'

(*Page* 6, *Annex* B, *clause* **B-2.1**, *line* 2) — Substitute 'surface water or ground water or sea water' *for* 'ground water'.

(*Page* 6, *Annex* B, *clause* **B-2.2**) — Delete the clause.

(*Page* 6, *Annex* B, *clause* **B-2.3**) — Delete the clause.

(*Page* 6, *Annex* B, *clause* **B-3.1**, *line* 4) — Insert 'or sea water' after the words 'surface water'.

Amend No. 6 to IS 14543 : 2004

(*Page* 6, *Annex* B, *clause* **B-3.1**, *line* 6) — Insert 'or sea water' after the words 'surface water'.

(*Page* 10, *Annex* B, *clause* **B-8.3**) — Insert the following at the end:

'Sea water shall be subjected to desalination and related process before being subjected to the above processes.'

(FAD 14)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 7 MAY 2011
TO
IS 14543 : 2004 PACKAGED DRINKING WATER (OTHER THAN PACKAGED NATURAL MINERAL WATER) — SPECIFICATION

(First Revision)

(*Page* 1, *clause* **5.1.8**, *line* 3) — Substitute 'IS 15187' *for* 'IS 5887 (Part 3)*'.

(*Page* 1, *clause* **5.1.8**) — Delete the last sentence.

[*Page* 2, *clause* **5.1.9**, *Note* 2 (*see also Amendment No.* 4)] — Substitute the following for the existing:

'NOTE 2 — In case of dispute, the method indicated by '*' in **5.1.1** to **5.1.3** shall be the reference method.'

[*Page* 2, *Table* 2, *Sl No.* (i), *col* 4] — Substitute 'Annex F of IS 13428* or IS 15302 or IS 3025 (Part 2)' *for* 'Annex F of IS 13428* or IS 15302'.

[*Page* 2, *Table* 2, *Sl No.* (ii), *col* 4] — Substitute 'IS 3025 (Part 42)* or IS 3025 (Part 2)' *for* 'IS 3025 (Part 42)'.

[*Page* 2, *Table* 2, *Sl No.* (iii), *col* 4] — Substitute 'IS 3025 (Part 53)* or IS 15303 or IS 3025 (Part 2)' *for* 'IS 3025 (Part 53)* or IS 15303'

[*Page* 2, *Table* 2, *Sl No.* (iv), *col* 4 (*see also Amendment No.* 6)] — Substitute 'IS 3025 (Part 59)* or IS 3025 (Part 2)' *for* 'IS 3025 (Part 59)'.

[*Page* 2, *Table* 2, *Sl No.* (viii), *col* 4] — Substitute 'IS 3025 (Part 49)* or IS 3025 (Part 2)' *for* 'IS 3025 (Part 49)'.

[*Page* 2, *Table* 2, *Sl No.* (xv), *col* 4] — Substitute 'IS 3025 (Part 40)* or IS 3025 (Part 2)' *for* 'IS 3025 (Part 40)'.

[*Page* 2, *Table* 2, *Sl No.* (xvi), *col* 4] — Substitute 'IS 3025 (Part 46)* or IS 3025 (Part 2)' *for* 'IS 3025 (Part 46)'.

Amend No. 7 to IS 14543 : 2004

[*Page* 2, *Table* 2, *Sl No.* (xvii), *col* 4] — Substitute 'IS 3025 (Part 45)* or IS 3025 (Part 2)' *for* 'IS 3025 (Part 45)'.

[*Page* 2, *Table* 2, *Sl No.* (xix), *col* 4] — Substitute 'Clause 6 of IS 3025 (Part 43)' *for* 'IS 3025 (Part 43)'.

[*Page* 2, *Table* 2, *Sl No.* (xxiv), *col* 4] — Substitute 'Annex H of IS 13428* or IS 3025 (Part 2)' *for* 'Annex H of IS 13428'.

[*Page* 3, *Table* 3, *Sl No.* (iv), *col* 4] — Substitute 'Clause 2 of IS 3025 (Part 27)' *for* 'IS 3025 (Part 27)'.

[*Page* 3, *Table* 3, *Sl No.* (vi), *col* 4] — Substitute 'Annex J of IS 13428* or IS 3025 (Part 2)' *for* 'Annex J of IS 13428'.

(*Page* 3, *Table* 3) — Insert following note at the end:

'NOTE — In case of dispute, the method indicated by '*' shall be the reference method.'

(*Page* 4, *Annex* A) — Insert the following new entry before 'IS 3025 (Part 4) : 1983 Colour (*first revision*)':

'(Part 2) : 2004 Determination of 33 elements by inductively coupled plasma atomic emission spectroscopy.'

(*Page* 5, *Annex* A, *col* 1) — Delete the following entry:

'(Part 3) : 1999 General guidance on methods for detection of *Salmonella* (*second revision*).'

(FAD 14)

Reprography Unit, BIS, New Delhi, India

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Drinks and Carbonated Beverages Sectional Committee had been approved by the Food and Agriculture Division Council.

This standard was originally published in 1998. In preparing this standard, assistance had been derived from the following:

a) Manual on water supply and treatment (*third edition*), 1991, prepared by the expert committee constituted under the Ministry of Urban Development, New Delhi.

b) Codex Code of practice for collecting, processing and marketing of natural mineral waters (CAC/RCP 33-1985).

c) EEC Directive, 80/778/EEC relating to the quality of water intended for human consumption.

Consumption of packaged water for drinking purposes has been increasing considerably in the country. Apart from water shortages at times, real and perceived needs to safeguard health have also contributed to an escalating trade in packaged drinking water at the national and international level. Considering the consumers' health and safety it has become imperative to ensure that the packaged water offered for sale is safe and free from harmful organisms. This revision has been undertaken to incorporate six amendments alongwith the technological developments, check list for hygienic requirements and consumer requirements. It is expected that this standard would help in achieving the above objective.

Separate standards have been formulated for packaged natural mineral water [*see* IS 13428 : 1998 'Packaged natural mineral water (*first revision*)]' and drinking water [*see* IS 10500 : 1991 'Drinking water (*first revision*)'].

In the preparation of this standard due consideration has been given to the provisions of the *Prevention of Food Adulteration Act*, 1954 and the Rules framed thereunder. This standard is, however, subject to the restrictions imposed under these rules, wherever applicable.

For the purpose of deciding whether a particular requirement of the standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded-off value should be the same as that of the specified value in this standard.

Indian Standard

PACKAGED DRINKING WATER (OTHER THAN PACKAGED NATURAL MINERAL WATER) — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and methods of sampling and test for drinking water (other than natural mineral water) offered for sale in packaged form.

2 REFERENCES

The standards given in Annex A contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards.

3 DEFINITIONS

For the purpose of this standard, the following definitions shall apply.

3.1 Drinking Water (Other than Natural Mineral Water) — Drinking water means water from any potable water source including public drinking water supply systems (*see* IS 10500).

3.2 Packaged Drinking Water (Other than Packaged Natural Mineral Water) — Packaged drinking water means water derived from any source of potable water which may be subjected to treatments, such as, decantation, filtration, combination of filtration, aeration, filtration with membrane filter, depth filter, cartridge filter, activated carbon filtration, demineralization, remineralization, reverse osmosis or any other method to meet the prescribed standard and packed. It may be disinfected to a level that will not lead to harmful contamination in the drinking water. It may be disinfected by means of chemical agents and /or physical methods to reduce of the number of micro-organism to a level that does not compromise food safety or suitability. It shall be filled in sealed containers of various compositions, forms and capacities that is suitable for direct consumption without further treatment. In case remineralization is a part of the treatment process, the ingredients used shall conform to the requirements of the *Prevention of Food Adulteration Act*, 1954 and the Rules framed thereunder.

4 HYGIENIC CONDITIONS

It shall be collected, processed, handled, packaged and marketed in accordance with the hygienic practices given in Annex B. A check list for good hygienic practices and food safety system for packaged water processing units given in Annex C.

5 REQUIREMENTS

5.1 Microbiological Requirements

5.1.1 *Escherichia coli* (or thermotolerant bacteria) shall be absent in any 250 ml sample when tested in accordance with the method given in IS 5887 (Part 1)* or IS 15185.

5.1.2 *Coliform*, bacteria shall be absent in any 250 ml sample when tested in accordance with the method given in IS 5401 (Part 1)* or IS 15185.

5.1.3 *Faecal streptococci* and *Staphylococcus aureus*, shall be absent in any 250 ml sample when tested in accordance with the method given in IS 5887 (Part 2)* *Streptococci* (*Enterococci*) may also be tested by the method specified in IS 15186.

5.1.4 *Sulphite reducing anaerobes*, shall be absent in 50 ml sample when tested in accordance with the method given in Annex C of IS 13428.

5.1.5 *Pseudomonas aeruginosa*, shall be absent in 250 ml sample when tested in accordance with the method given in Annex D of IS 13428.

5.1.6 *Aerobic Microbial Count*

The total viable colony count shall not exceed 100 per ml at 20 to 22°C in 72 h on agar-agar or on agar-gelatin mixture, and 20 per ml at 37°C in 24 h on agar-agar when tested in accordance with the methods given in IS 5402.

5.1.7 Yeast and mould shall be absent in 250 ml sample when tested in accordance with the method given in IS 5403.

5.1.8 *Salmonella* and *Shigella*, shall be absent in any 250 ml sample when tested in accordance with the method given in IS 5887 (Part 3)* and IS 5887 (Part 7) respectively. *Salmonella* may also be tested by the method specified in IS 15187.

5.1.9 *Vibrio cholera* and *V. parahaemolyticus*, shall be absent in 250 ml sample when tested in accordance with the method given in IS 5887 (Part 5).

5.1.10 The membrane filtration technique outlined in IS 15188 may be used to pass the sample of water to be tested through membrane before the microbiological tests specified from **5.1.1** to **5.1.5** and **5.1.7** to **5.1.9** are carried out.

NOTE— In case of dispute, the method indicated by '*' in **5.1.1** to **5.1.3** and **5.1.8** shall be reference method.

5.2 Packaged drinking water shall also comply with the requirements given in Tables 1, 2, 3 and 4.

Table 1 Organoleptic and Physical Parameters

(*Clause* 5.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to IS
(1)	(2)	(3)	(4)
i)	Colour, true colour units, *Max*	2	3025 (Part 4)
ii)	Odour	Agreeable	3025 (Part 5)
iii)	Taste	do	3025 (Part 8)
iv)	Turbidity, NTU, *Max*	2	3025 (Part 10)
v)	Total dissolved solids, mg/l, *Max*	500	3025 (Part 16)
vi)	*p*H	6.5 to 8.5	3025 (Part 11)

Table 2 General Parameters Concerning Substances Undesirable in Excessive Amounts

(*Clause* 5.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Barium (as Ba), mg/l, *Max*	1.0	Annex F of IS 13428* or IS 15302
ii)	Copper (as Cu), mg/l, *Max*	0.05	IS 3025 (Part 42)
iii)	Iron (as Fe), mg/l, *Max*	0.1	IS 3025 (Part 53)* or IS 15303
iv)	Manganese (as Mn), mg/l, *Max*	0.1	Clause 35 of IS 3025
v)	Nitrate (as NO_3), mg/l, *Max*	45	IS 3025 (Part 34)
vi)	Nitrite (as NO_2), mg/l, *Max*	0.02	IS 3025 (Part 34)
vii)	Fluoride (as F), mg/l, *Max*	1.0	Clause 23 of IS 3025
viii)	Zinc (as Zn), mg/l, *Max*	5	IS 3025 (Part 49)
ix)	Silver (as Ag), mg/l, *Max*	0.01	Annex J of IS 13428
x)	Aluminium (as Al), mg/l, *Max*	0.03	IS 3025 (Part 55) or IS 15302*
xi)	Chloride (as Cl), mg/l, *Max*	200	IS 3025 (Part 32)
xii)	Selenium (as Se), mg/l, *Max*	0.01	IS 3025 (Part 56) or IS 15303*
xiii)	Sulphate (as SO_4), mg/l, *Max*	200	IS 3025 (Part 24)
xiv)	Alkalinity (as HCO_3), mg/l, *Max*	200	IS 3025 (Part 23)
xv)	Calcium (as Ca), mg/l, *Max*	75	IS 3025 (Part 40)
xvi)	Magnesium (as Mg), mg/l, *Max*	30	IS 3025 (Part 46)
xvii)	Sodium (as Na), mg/l, *Max*	200	IS 3025 (Part 45)
xviii)	Residual free chlorine, mg/l, *Max*	0.2	IS 3025 (Part 26)
xix)	Phenolic compounds (as C_6H_5OH), mg/l, *Max*	Absent	IS 3025 (Part 43)
xx)	Mineral oil, mg/l, *Max*	Absent	IS 3025 (Part 39)
xxi)	Anionic surface active agents (as MBAS), mg/l, *Max*	0.2	Annex K of IS 13428
xxii)	Sulphide (as H_2S), mg/l, *Max*	0.05	IS 3025 (Part 29)
xxiii)	Antimony (as Sb), mg/l, *Max*	0.005	Annex G of IS 13428* or IS 15303
xxiv)	Borates (as B), mg/l, *Max*	5	Annex H of IS 13428

NOTE — In case of dispute, the method indicated by '*' shall be the reference method.

Table 3 Parameters Concerning Toxic Substances

(*Clause* 5.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Mercury (as Hg), mg/l, *Max*	0.001	IS 3025 (Part 48)
ii)	Cadmium (as Cd), mg/l, *Max*	0.01	IS 3025 (Part 41)
iii)	Arsenic (as As), mg/l, *Max*	0.05	IS 3025 (Part 37)
iv)	Cyanide (as CN), mg/l, *Max*	Absent	IS 3025 (Part 27)
v)	Lead (as Pb), mg/l, *Max*	0.01	IS 3025 (Part 47)
vi)	Chromium (as Cr), mg/l, *Max*	0.05	Annex J of IS 13428
vii)	Nickel (as Ni), mg/l, *Max*	0.02	Annex L of IS 13428
viii)	Polychlorinated biphenyle (PCB)	Not detectable	Annex M of IS 13428
ix)	Polynuclear aromatic hydrocarbons	Not detectable	APHA 6440

Table 4 Parameters Concerning Radio-Active Residues

(*Clause* 5.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to IS
(1)	(2)	(3)	(4)
i)	Alpha emitters, Bq/l *Max*	0.1	14194 (Part 2)
ii)	Beta emitters, Bq/l, *Max*	1	14194 (Part 1)

5.3 The maximum limit of the pesticide residues for pesticides as given in Annex D shall be as follows:

Sl No.	*Parameters*	*Limits*
i)	Pesticide residues considered individually	Not more than 0.000 1 mg/l
ii)	Total pesticide residue	Not more than 0.000 5 mg/l

5.3.1 The analysis for pesticide residues shall be conducted by a recognized laboratory using internationally established test methods meeting the residues limits specified above as given in Annex D.

6 PACKING

It shall be packed in clean, hygienic, colourless, transparent and tamperproof bottles/containers, made of polyethylene (PE) conforming to IS 10146 or polyvinyl chloride (PVC) conforming to IS 10151 or polypropylene conforming to IS 10910 or polyalkylene terephthalate (PET and PBT) conforming to IS 12252 or polycarbonate conforming to IS 14971 or polystyrene conforming to IS 10142 or sterile glass bottles suitable for preventing possible adulteration or contamination of the water. Plastic containers shall be conforming to IS 15410.

All packaging materials of plastic origin shall satisfy the overall migration limit of 60 mg/l and colour migration limit 10 mg/dm_2 when tested as per method given in IS 9845.

7 MARKING

7.1 The following particulars shall be marked legibly and indelibly on the label of the bottle container:

a) Name of the product (that is packaged drinking water);

b) Name and address of the processor;

c) Brand name, if any;

d) Batch or Code number;

e) Date of processing/packing;

f) Treatment of disinfection, if any;

g) Best for consumption up to ... (date/month/year in capital letters);

OR

Best for consumption within days or months from the date of packing;

h) Net volume;

j) Direction for storage; and

k) Any other markings required under the *Standards of Weights and Measures (Packaged Commodities) Rules*, 1977, and the *Prevention of Food Adulteration Act*, 1954 and the Rules framed thereunder.

7.2 Labelling Prohibitions

7.2.1 No claims concerning medicinal (preventative, alleviative or curative) effects shall be made in respect of the properties of the product covered by the standard. Claims of other beneficial effects related to the health of the consumer shall not be made.

7.2.2 The name of the locality, hamlet or specified place may not form part of the brand name unless it refers to a packaged drinking water collected processed at the place designated by that brand name.

7.2.3 The use of any statement or of any pictorial device which may create confusion in the mind of the public or in any way mislead the public about the nature, origin, composition and properties of drinking water is prohibited.

7.3 BIS Certification Marking

The product may also be marked with the Standard Mark.

7.3.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act*, 1986 and Rules and Regulations framed thereunder. The details of the conditions under which the licence for use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

8 SAMPLING

Representative samples of the material shall be drawn and the criteria of conformity to this standard shall be established according to method described in Annex E.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
3025 : 1964	Methods of sampling and test (physical and chemical) for water used in industry
3025	Methods of sampling and test (physical and chemical) for water and waste water
(Part 4) : 1983	Colour (*first revision*)
(Part 5) : 1983	Odour (*first revision*)
(Part 8) : 1984	Taste rating (*first revision*)
(Part 10) : 1984	Turbidity (*first revision*)
(Part 11) : 1983	*p*H value (*first revision*)
(Part 16) : 1984	Filterable residue (total dissolved solids) (*first revision*)
(Part 23) : 1986	Alkalinity (*first revision*)
(Part 24) : 1986	Sulphates (*first revision*)
(Part 26) : 1986	Chlorine, residual (*first revision*)
(Part 27) : 1986	Cyanide (*first revision*)
(Part 29) : 1986	Sulphide (*first revision*)
(Part 32) : 1988	Chloride (*first revision*)
(Part 34) : 1988	Nitrogen (*first revision*)
(Part 37) : 1988	Arsenic (*first revision*)
(Part 39) : 1991	Oil and grease
(Part 40) : 1991	Calcium
(Part 41) : 1992	Cadmium (*first revision*)
(Part 42) : 1992	Copper (*first revision*)
(Part 43) : 1992	Phenols (*first revision*)
(Part 45) : 1993	Sodium and potassium (*first revision*)
(Part 46) : 1994	Magnesium (*first revision*)
(Part 47) : 1994	Lead (*first revision*)
(Part 48) : 1994	Mercury (*first revision*)
(Part 49) : 1994	Zinc (*first revision*)
(Part 53) : 2003	Iron (*first revision*)
(Part 55) : 2003	Aluminium (*first revision*)
(Part 56) : 2003	Selenium (*first revision*)
4905 : 1968	Methods for random sampling
5401(Part 1) : 2002	Microbiology — General guidance for enumeration of coliform: Part 1 Colony count technique (*first revision*)
5402 : 2002	Microbiology — General guidance for enumeration of micro-organisms — Colony count technique at 30°C (*first revision*)

IS No.	Title
5403 : 1999	Method for yeast and mould count in foodstuffs and animal feed (*first revision*)
5887	Methods for detection of bacteria responsible for food poisoning
(Part 1) : 1976	Isolation, identification and enumeration of *Escherichia coli* (*first revision*)
(Part 2) : 1976	Isolation, identification and enumeration of *Staphylococcus aureus* and *faecal streptococci* (*first revision*)
(Part 3) : 1999	General guidance on methods for detection of *Salmonella* (*second revision*)
(Part 5) : 1976	Isolation, identification and enumeration of *Vibrio cholerae* and *Vibrio parahaemolyticus* (*first revision*)
(Part 7) : 1999	General guidance on methods for isolation and identification of *Shigella*
9845 : 1998	Determination of overall migration of constituents of plastic materials and articles intended to come in contact with foodstuffs — Method of analysis (*second revision*)
10142 : 1999	Polystyrene (crystal and high impact) for its safe use in contact with foodstuffs, pharmaceuticals and drinking water (*first revision*)
10146 : 1982	Polyethylene for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
10151 : 1982	Polyvinyl chloride (PVC) and its copolymers for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
10500 : 1991	Drinking water (*first revision*)
10910 : 1984	Polypropylene and its copolymers for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
12252 : 1987	Polyalkylene terrephthalates (PET and PBT) for their safe use in contact with foodstuffs, pharmaceuticals and drinking water
13428 : 1998	Packaged natural mineral water (*first revision*)
14194	Radionuclides in environmental samples — Methods of estimation
(Part 1) : 1994	Gross beta activity measurement
(Part 2) : 1994	Gross alpha activity measurement
14971 : 2001	Polycarbonate resins for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
15185 : 2002	Water quality — Detection and enumeration of *Escherichia coli* and coliform bacteria — Membrane filtration method
15186 : 2002	Water quality — Detection and enumeration of intestinal enterococci — Membrane filtration method
15187 : 2002	Water quality — Detection of *Salmonella* species
15188 : 2002	Water quality — General guide to the enumeration of micro-organisms by culture
15302 : 2002	Determination of aluminium and barium in water by direct nitrous oxide-acetylene flame atomic absorption spectrometry
15303 : 2002	Determination of antimony, iron and selenium in water by electrothermal atomic absorption spectrometry
15410 : 2003	Containers for packaging of natural mineral water and packaged drinking water

ANNEX B

(*Clause* 4)

HYGIENIC PRACTICES

B-1 FIELD OF APPLICATION

The hygienic practices cover the appropriate general techniques for collecting drinking water, its treatment, bottling, packaging, storage, transport, distribution and sale for direct consumption, so as to guarantee a safe, healthy and wholesome product.

B-2 HYGIENE PRESCRIPTIONS FOR COLLECTION OF DRINKING WATER

B-2.1 Extraction or Collection

In the case of extraction or collection of water intended for packaging from ground water sources, it should be ensured that it is safe from pollution, whether caused by natural occurrence or actions or neglect or ill-will.

B-2.2 If water to be processed for packing is obtained from any other potable source it should be protected from its being contaminated.

B-2.3 The firms using waters from drinking water systems intended for packaging, should ensure that it meets the requirements of the standard.

B-2.4 Materials

The pipes, pumps or other possible devices coming into contact with water and used for its collection should be made of such material that they do not change the quality of water.

B-3 PROTECTIVE MEASURES

B-3.1 All possible precautions should be taken within the protected perimeter to avoid any pollution of, or external influence on, the quality of the ground or surface water. Preventive measures should be taken for disposal of liquid, solid or gaseous waste that could pollute the ground or surface water. Drinking water resources should not be in the path of potential source of underground contamination.

B-3.2 Protection of the Area of Origin

The immediate surroundings of the extraction or collection area should be protected by limiting access to authorized persons only. Wellheads and spring outflows should be protected by a suitable structure to prevent entry by unauthorized individuals, pests and other sources of extraneous matter.

B-4 TRANSPORT OF DRINKING WATER

B-4.1 Means of Transport, Piping and Reservoirs

Any vehicle, piping or reservoir used in the processing of water from its source to the bottling facilities, should be made of inert material such as ceramic and stainless steel which prevent any deterioration, be it by water, handling, servicing or by disinfection; it should allow easy cleaning.

B-4.2 Maintenance of Vehicles and Reservoirs

Any vehicle or reservoir should be properly cleaned and, if necessary, disinfected and kept in good repair so as not to present any danger of contamination to drinking water and of deterioration of its quality.

B-5 ESTABLISHMENT FOR PROCESSING OF DRINKING WATER—DESIGN AND FACILITIES

B-5.1 Location

Establishments should be located in areas which are free from objectionable odours, smoke, dust or other contaminants and are not subject to flooding.

B-5.2 Roadways and Areas Used by Wheeled Traffic

Such roadways and areas serving the establishment which are within its boundaries or in its immediate vicinity should have a hard paved surface suitable for wheeled traffic. There should be adequate drainage and provision should be made for protection of the extraction area.

B-5.3 Buildings and Facilities

B-5.3.1 *Type of Construction*

Buildings and facilities should be of sound construction and maintained in good repair.

B-5.3.2 *Disposition of Holding Facilities*

Rooms for recreation, for storing or packaging of water and areas for cleaning of containers to be reused should be apart from the bottling areas to prevent the end product from being contaminated. Raw materials and packaging materials and any other materials which come into contact with drinking water should be stored apart from other material.

B-5.3.3 Adequate working space should be provided to allow for satisfactory performance of all operations.

B-5.3.4 The design should be such as to permit easy and adequate cleaning and to facilitate proper supervision of hygiene for drinking water.

B-5.3.5 The buildings and facilities should be designed to provide separation by partition, location or other effective means between those operations which may cause cross-contamination.

B-5.3.6 Buildings and facilities should be designed to

facilitate hygienic operations by means of a regulated flow in the process from the arrival of the drinking water at the premises to the finished product, and should provide for appropriate conditions for the process and the product.

B-5.3.7 *Drinking Water Handling, Storing and Bottling Areas*

B-5.3.7.1 *Floors*

Where appropriate, should be of water-proof, non-absorbent, washable, non-slip and non-toxic materials, without crevices, and should be easy to clean and disinfect. Where appropriate, floors should have sufficient slope for liquids to drain to trapped outlet.

B-5.3.7.2 *Walls*

Where appropriate, should be of water proof, non-absorbent, washable and non-toxic materials and should be light coloured. Up to a height appropriate for the operation they should be smooth and without crevices, and should be easy to clean and disinfect.

Where appropriate, angles between walls, between walls and floors and between walls and ceilings should be sealed and smoothen to facilitate cleaning.

B-5.3.7.3 *Ceilings*

Should be so designed, constructed and finished as to prevent the accumulation of dirt and minimize, condensation, mould growth and flaking, and should be easy to clean.

B-5.3.7.4 *Windows*

Windows and other openings should be so constructed as to avoid accumulation of dirt and those which open should be fitted with screens. Screens should be easily movable for cleaning and kept in good repair. Internal window sills should be sloped to prevent use as shelves.

B-5.3.7.5 *Doors*

Should have smooth, non-absorbent surfaces and, where appropriate, be self-closing and close fitting type.

B-5.3.7.6 *Stairs, lift cages and auxiliary structures*

Platforms, ladders, chutes, should be so situated and constructed as not to cause contamination to drinking water. Chutes should be constructed with provision of inspection and cleaning hatches.

B-5.3.7.7 *Piping*

Piping for drinking water lines should be independent of non-potable water.

B-5.3.8 In drinking water handling areas all overhead structures and fittings should be installed in such a manner as to avoid contamination directly or indirectly of drinking water and raw materials by condensation and drip and should not hamper cleaning operations. They should be insulated where appropriate and be so designed and finished as to prevent the accumulation of dirt and to minimize condensation, mould growth and flaking. They should be easy to clean.

B-5.3.9 Living quarters, toilets and areas where animals are kept should be completely separated and should not open directly on to drinking water handling areas.

B-5.3.10 Where appropriate, establishments should be so designed that access can be controlled.

B-5.3.11 The use of material which cannot be adequately cleaned and disinfected, such as, wood, should be avoided unless its use would not be a source of contamination.

B-5.3.12 *Canalization, Drainage Lines*

Canalization and drainage and used water lines should be built and maintained in such a manner as not to present any risk whatsoever of polluting the underground water source.

B-5.3.13 *Fuel Storage Area*

Any storage area or tank for the storing of fuels, such as, coal or hydrocarbons should be designed, protected, controlled and maintained in such a manner as not to present a risk of pollution during the storage and manipulation of these fuels.

B-5.4 Hygienic Facilities

B-5.4.1 *Water Supply*

B-5.4.1.1 Ample supply of potable water under adequate pressure and of suitable temperature should be available with adequate facilities for its storage, where necessary, and distribution with adequate protection against contamination. The potable water should conform to IS 10500.

B-5.4.1.2 Potable water, non-potable water for steam production or for refrigeration or for any other use should be carried in separate lines with no cross connection between them and without any chance of back siphonage. It would be desirable that these lines be identified by different colours.

B-5.4.2 *Effluent and Waste Disposal*

Establishments should have an efficient effluent and waste disposal system which should at all times be maintained in good order and repair. All effluent lines (including sewer systems) should be large enough to carry the full loads and should be so constructed as to avoid contamination of potable water supplies.

B-5.4.3 *Changing Facilities and Toilets*

Adequate, suitable and conveniently located changing facilities and toilets should be provided in all

establishments. Toilets should be so designed as to ensure hygienic removal of waste matter. These areas should be well lighted, ventilated and should not open directly on to drinking water handling areas. Hand washing facilities with warm or hot and cold water, a suitable hand-cleaning preparation, and with suitable hygienic means of drying hands, should be provided adjacent to toilets and in such a position that the employee will have to use them when returning to the processing area. Where hot and cold water are available mixing taps should be provided. Where paper towels are used, a sufficient number of dispensers and receptacles should be provided near each washing facility. Care should be taken that these receptacles for used paper towels are regularly emptied. Taps of a non-hand operatable type are desirable. Notices should be posted directing personnel to wash their hands after using the toilet.

B-5.4.4 *Hand Washing Facilities in Processing Area*

Adequate and conveniently located facilities for hand washing and drying should be provided wherever the process demands. Where appropriate facilities for hand disinfection should also be provided. Warm or hot and cold water should be available and taps for mixing the two should be provided. There should be suitable hygienic means of drying hands. Where paper towels are used, a sufficient number of dispensers and receptacles should be provided adjacent to each washing facility. Taps of a non-hand operatable type are desirable. The facilities should be furnished with properly trapped waste pipes leading to drains.

B-5.4.5 *Disinfection Facilities*

Where appropriate, adequate facilities for cleaning and disinfection of equipment should be provided. These facilities should be constructed of corrosion resistant materials, capable of being easily cleaned, and should be fitted with suitable means of supplying hot and cold water in sufficient quantities.

B-5.4.6 *Lighting*

Adequate lighting should be provided throughout the establishment. Where appropriate, the lighting should not alter colours and the intensity should not be less than:

a) 540 lux (50 foot candles) at all inspection points,

b) 220 lux (20 foot candles) in work rooms, and

c) 110 lux (10 foot candles) in other areas.

Suspended light bulbs and fixtures in any stage of production should be of a safer type and protected to prevent contamination of drinking water in case of breakage.

B-5.4.7 *Ventilation*

Adequate ventilation should be provided to prevent excessive heat, steam condensation and dust and to remove contaminated air. The direction of the air flow should never be from a dirty area to a clean area. Ventilation openings should be provided with a screen or other protecting enclosure of non-corrodible material. Screens should be easily removable for cleaning.

B-5.4.8 *Facilities for Storage of Waste and Inedible Material*

Facilities should be provided for the storage of waste and inedible material prior to removal from the establishment. These facilities should be designed to prevent access to waste or inedible material by pests and to avoid contamination of drinking water; equipment, buildings or roadways on the premises.

B-5.5 Equipment and Utensils

B-5.5.1 *Materials*

All equipment and utensils used in drinking water handling areas and which may contact the drinking water should be made of material which does not transmit toxic substances, odour or taste, is non-absorbent, is resistant to corrosion and is capable of withstanding repeated cleaning and disinfection. Surfaces should be smooth and free from pits and crevices. The use of wood and other materials which cannot be adequately cleaned and disinfected should be avoided except when their use would not be a source of contamination.

B-5.5.2 *Hygienic Design, Construction and Installation*

B-5.5.2.1 All equipment and utensils should be so designed and constructed as to prevent hazards and permit easy and thorough cleaning and disinfection.

B-6 ESTABLISHMENT

B-6.1 Maintenance

The buildings, equipment, utensils and all other physical facilities of the establishment, including drains, should be maintained in good repair and in an orderly condition.

B-6.2 Cleaning and Disinfection

B-6.2.1 To prevent contamination of drinking water, all equipment and utensils should be cleaned as frequently as necessary and disinfected whenever circumstances demand.

B-6.2.2 Adequate precautions should be taken to prevent drinking water from being contaminated during cleaning or disinfection of rooms, equipment or utensils, by wash water and detergents or by disinfectants and their solutions. Detergents and disinfectants should be suitable for the purpose intended. Any residues of these agents on a surface which may come in contact with drinking water should be removed by thorough rinsing

with water, before the area or equipment is again used for handling drinking water.

B-6.2.3 Either immediately after cessation of work for the day or at such other times as may be appropriate, floors, including drains, auxiliary structures and walls of water handling areas should be thoroughly cleaned.

B-6.2.4 Changing facilities and toilets should be kept clean at all times.

B-6.2.5 Roadways and yards in the immediate vicinity of and serving the premises should be kept clean.

B-6.3 Hygiene Control Programme

A permanent cleaning and disinfection schedule should be drawn up for establishment to ensure that all areas are appropriately cleaned and that critical areas, equipment and material are designated for special attention. An individual, who should preferably be a permanent member of the staff of the establishment and whose duties should be independent of production, should be appointed to be responsible for the cleanliness of the establishment. He should have a thorough understanding of the significance of contamination and the hazards involved. All cleaning personnel should be well-trained in cleaning techniques.

B-6.4 Storage and Disposal of Waste

Waste material should be handled in such a manner as to avoid contamination of drinking water. Care should be taken to prevent access to waste by pests. Waste should be removed from the water handling and other working areas as often as necessary and at least daily. Immediately after disposal of the waste, receptacles used for storage and any equipment which has come into contact with the waste should be cleaned and disinfected. The waste storage area should also be cleaned and disinfected.

B-6.5 Exclusion of Animals

Animals that are uncontrolled or that could be a hazard to health should be excluded from establishments.

B-6.6 Pest Control

B-6.6.1 There should be an effective and continuous programme for the control of pests. Establishments and surrounding areas should be regularly examined for evidence of infestation.

B-6.6.2 If pests gain entrance to the establishment, eradication measures should be instituted. Control measures involving treatment with chemical, physical or biological agents should only be undertaken by or under direct supervision of personnel who have a thorough understanding of the potential hazards to health resulting from the use of these agents, including those hazards which may arise from residues retained in the drinking water.

B-6.6.3 Pesticides should only be used if other precautionary measures cannot be used effectively. Before pesticides are applied, care should be taken to safeguard drinking water, equipment and utensils from contamination. After application, contaminated equipment and utensils should be thoroughly cleaned to remove residues prior to being used again.

B-6.7 Storage of Hazardous Substances

B-6.7.1 Pesticides or other substances which may present a hazard to health should be suitably labelled with a warning about their toxicity and use. They should be stored in locked rooms or cabinets, and dispersed and handled only by authorized and properly trained personnel or by persons under strict supervision of trained personnel. Extreme care should be taken to avoid contamination.

B-6.7.2 Except when necessary for hygienic or processing purposes, no substance which could contaminate drinking water should be used or stored in drinking water handling areas.

B-6.8 Personal Effects and Clothing

Personal effects and clothing should not be deposited in drinking water handling areas.

B-7 PERSONNEL HYGIENE AND HEALTH REQUIREMENTS

B-7.1 Hygiene Training

Managers of establishments should arrange for adequate and continuing training of all water handlers in hygienic handling of water and in personal hygiene so that they understand the precautions necessary to prevent contamination of drinking water.

B-7.2 Medical Examination

Persons who come into contact with drinking water in the course of their work should have a medical examination prior to employment, if the official agency having jurisdiction acting on medical advice, considers that this is necessary, whether because of epidemiological considerations or the medical history of the prospective water handler. Medical examination of water handlers should be periodically carried out and when clinically or epidemiologically indicated.

B-7.3 Communicable Diseases

The management should take care to ensure that no person, whether known or suspected to be suffering from, or to be a carrier of a disease likely to be transmitted or afflicted with infected wounds, skin infections, sores or diarrhoea, is permitted to work in any drinking water handling area in any capacity in which there is any likelihood of such a person directly or indirectly contaminating drinking water with pathogenic micro-organisms. Any person so affected should immediately report to the management.

B-7.4 Injuries

Any person who has a cut or wound should not continue to handle drinking water or contact surfaces until the injury is completely protected with a waterproof covering which is firmly secured and which is conspicuous in colour. Adequate first-aid facilities should be provided for this purpose.

B-7.5 Washing of Hands

Every person, while on duty in a drinking water handling area, should wash the hands frequently and thoroughly with a suitable hand cleaning preparation under running warm water. Hands should always be washed before commencing work, immediately after using the toilet, after handling contaminated material and whenever else necessary. After handling any material which might be capable of transmitting disease, hands should be washed and disinfected immediately. Notices requiring hand-washing should be displayed. There should be adequate supervision to ensure compliance with this requirement.

B-7.6 Personal Cleanliness

Every person engaged in a drinking water handling area should maintain a high degree of personal cleanliness while on duty and should, at all times while so engaged, wear suitable protective clothing including head covering and footwear, all of which should be cleanable, unless designed to be disposed off and should be maintained in a clean condition consistent with the nature of the work in which the person is engaged. Aprons and similar items should not be washed on the floor. When drinking water is manipulated by hand, any jewellery that cannot be adequately disinfected should be removed from the hands. Personnel should not wear any insecure jewellery when engaged in handling drinking water.

B-7.7 Personal Behaviour

Any behaviour which could result in contamination of drinking water, such as eating, use of tobacco, chewing (for example, gum, sticks, betel nuts, etc) or unhygienic practices, such as, spitting, should be prohibited in drinking water handling areas.

B-7.8 Visitors

Precautions should be taken to prevent visitors as far as possible from visiting the drinking water handling areas. If unavoidable, the visitors should observe the provisions of **B-6.8** and **B-7.3**

B-7.9 Supervision

Responsible for ensuring compliance by all personnel with all requirements of **B-6.1** to **B-6.8** and the responsibility should be specifically allocated to competent supervisory personnel.

B-8 ESTABLISHMENT : HYGIENIC PROCESSING REQUIREMENTS

B-8.1 Raw Material Requirements

To guarantee a good and stable quality of drinking water, the quality criteria should be monitored regularly.

B-8.2 Should there be a perceptible lacking in meeting the requirements, necessary corrective measures are immediately to be taken.

B-8.3 Treatment

The treatment may include decantation, filtration, combination filtration (for example, membrane filters, depth filters, cartridge filters, activated carbon), demineralization, reverse osmosis, aeration, and disinfection.

B-8.3.1 Processing should be supervised by technically competent personnel.

B-8.3.2 All steps in the production process, including packaging, should be performed without unnecessary delay and under conditions which will prevent the possibility of contamination, deterioration, or the growth of pathogenic and spoilage micro-organisms.

B-8.3.3 Rough treatment of containers should be avoided to prevent the possbility of contamination of the processed product.

B-8.3.4 Treatment are necessary controls and should be such as to protect against contamination or development of a public health hazard and against deterioration within the limits of good commercial practice.

B-8.4 Packaging Material and Containers

B-8.4.1 All packaging materials should be stored in a clean and hygienic manner. The material should be appropriate for the product to be packed and for the expected conditions of storage and should not transmit to the product objectionable substances beyond the limits specified. The packaging material should be sound and should provide appropriate protection from contamination. Only packaging material required for immediate use should be kept in the packing or tilling area.

B-8.4.2 Product containers should not have been used for any purpose that may lead to contamination of the product. In case of new containers if there is a possibility that they have been contaminated, should be cleaned and disinfected. When chemicals are used for these purposes, the container should be rinsed. Containers should be well drained after rinsing. Used and, when necessary, unused containers should be inspected immediately before filling.

B-8.5 Filling and Sealing of Containers

B-8.5.1 Packaging should be done under conditions

that preclude the introduction of contaminants in the product.

B-8.5.2 The methods, equipment and material used for sealing should guarantee a tight and impervious sealing and should not damage the containers nor deteriorate the physical, chemical, microbiological and organoleptic qualities of drinking water.

B-8.6 Packaging of Containers

The packaging of containers should protect the latter from contamination and damage and allow appropriate handling and storing.

B-8.7 Lot Identification

Each container shall be permanently marked with code to identify the producing factory and the lot. A lot is quantity of drinking water produced under identical conditions, all packages of which should bear a lot number that identifies the production during a particular time, interval and usually from a particular 'processing line' or other processing unit.

B-8.8 Processing and Production Records

Permanent, legible and dated records of pertinent processing and production details should be kept concerning each lot. These records should be retained for a period that exceeds the shelf life of the product or longer if required. Records should also be kept of the initial distribution by lot.

B-8.9 Product Durability

Product durability shall be declared on the container as per 7.1 (g). It shall be based on in-house self life study and proper checks and records be maintained for the conformity of the declared product durability.

B-8.10 Storage and Transport of the End-Product

The end-product should be stored and transported under such conditions as will preclude contamination with and/or proliferation of micro-organisms and protect against deterioration of the product or damage to the container. During storage, periodic inspection of the end-product should take place to ensure that only drinking water which is fit for human consumption is despatched and that the end-product specifications are complied with.

ANNEX C

(*Clause* 4)

CHECKLIST FOR GOOD HYGIENE PRACTICES AND FOOD SAFETY SYSTEMS FOR PACKAGED WATER PROCESSING UNITS

Sl No.	*Requirements*	*Answers*		*Remarks*
		Applied	Not Applied	
(1)	(2)	(3)	(4)	(5)
	A. Building, Facilities and Locations			
	i) Is the facility location a area free from objectionable odour, smoke, dust or other contaminants and not subject to flooding?			
	ii) Are the areas immediately surrounding the buildings, roads, parking places, suitably paved, grassed and kept clean?			
	iii) Is adequate facility for drainage of surroundings which is designed to handle peak load?			
	iv) Is the facility used for processing water free from domestic animals?			
	v) Is the facility surroundings free from refuse, waste materials, rubbish, over grown weeds and grasses?			
	vi) Are there adequate facilities for the disposal of effluents and wastes?			
	vii) Are the buildings and facilities of sound construction and maintained in good repair?			

Sl No.	*Requirements*	*Answers*		*Remarks*
		Applied	Not Applied	
(1)	(2)	(3)	(4)	(5)
viii)	Are the buildings and facilities designed and maintained to prevent entrance and harbouring of pests and entry of contaminants?			
ix)	Are building and facilities designed to facilitate hygienic operations?			
B.	**Plant and Physical Facilities**			
i)	Is adequate lighting provided at working station, hand washing area, and storage areas?			
ii)	Is the lighting intensity adequate: 1) 540 lux in all inspection area, and 2) 220 lux in work areas and walls			
iii)	Are light fixtures safety type and protected to prevent contamination in the event of breakage in the processing and packing area?			
iv)	Is adequate ventilation provided in processing areas to minimize odours, noxious fumes and condensates?			
v)	Are the barriers/traps provided at drains to prevent the entry of rodents from the drains into the facility?			
vi)	Is effective screening provided against entry of birds, animals, insects, rodents, etc			
vii)	Are doors, hatches and other openings to the building constructed to render opening pest proof? NOTE — Installation of one or more of the following which effectively prevents pest entry will meet this requirement: a) Doors self closing type, b) Have air curtains, and c) Have strip curtains.			
viii)	Are floors, walls, ceilings, windows and doors so designed and constructed as to prevent accumulation of dust, dirt and render them washable?			
ix)	Is product in process and storage area adequately protected from any leakage from external surfaces and other sources of contamination?			
x)	Are immediate surroundings of extraction or collection protected from entry of unauthorized persons?			
C.	**Raw Water Processing**			
i)	In case of extraction/collection for processing are the sources free from contaminations/impurities?			
ii)	Are water storage tanks, pipe lines utilized for handling water constructed and so designed as to facilitate cleaning and inspection?			

Sl No.	*Requirements*	*Answers*		*Remarks*
		Applied	Not Applied	
(1)	(2)	(3)	(4)	(5)
iii)	Are inspections of containers/carriers/pipe lines of raw water supply performed for the material of construction and cleanliness?			
iv)	Are possible chances of contamination from incoming water assessed?			
v)	Are water storage tanks effectively cleaned to prevent entry of pests and potential contaminator?			
vi)	Are the storage tanks periodically cleaned and records maintained?			
vii)	Are the processed water contact surfaces regularly cleaned and sanitized?			
viii)	Is all equipment utensils so designed and constructed as to prevent hygiene hazards and prevent easy cleaning and sanitation?			
D.	**Post-Processing Handling**			
i)	Are cleaning operations of bottles/containers so done as to preclude contamination of product and product contact services with residues?			
ii)	Has absence of residual cleaning chemicals been ensured?			
iii)	Is preventive maintenance in place for all processing machinery and equipment?			
iv)	Are the primary packing material and containers of food grade conforming to relevant Indian Standards?			
v)	Are packing and sealing, where required, monitored?			
vi)	Are containers visually/electronically inspected for their soundness?			
vii)	Are physical hazards prevented from entering into processed water?			
viii)	Are glassware excluded from production area?			
E.	**Packaging Material and Finished Goods Storage**			
i)	Are the primary packing material and containers of food grade conforming to relevant Indian Standards?			
ii)	Are packaging material inspected to ensure their suitability?			
iii)	Are the packing materials especially primary packing material properly stored and properly handled to preclude contamination?			
iv)	Are packaging material purchased, stored and handled in sanitary manner?			

Sl No.	*Requirements*	*Answers*		*Remarks*
		Applied	Not Applied	
(1)	(2)	(3)	(4)	(5)
	F. Finished Product Storage and Distribution			
	i) Is first-in-first out (FIFO) of stored product maintained?			
	ii) Is storage properly sanitized and disinfected periodically?			
	iii) Are stores protected from pest infestations?			
	iv) Are coding and tracking clear and in place?			
	v) Are the instruction clear and in place?			
	vi) Are hold/release procedure in place and product identified?			
	vii) Are the records maintained for batch number, date of and volume of production?			
	viii) Are transport containers/vehicles maintained in clean condition.			
	G. Customer Handling of Products			
	i) Are the storage instructions provided on containers?			
	ii) Is the shelf life period/best before mentioned on containers in accordance with *PFA* requirements?			
	iii) Are instructions provided for handling defective/ damaged products?			
	H. Sanitary Facilities and Control			
	i) Are toilet provided in sufficient numbers and are they provided with:			
	1) Doors of self closing type?			
	2) Opening directly into processing areas?			
	3) Hand washing signs provided in appropriate language?			
	4) Proper lighting and ventilation?			
	5) Proper maintenance to keep in clean and tidy manner?			
	ii) Are hand washing facilities provided adequately and conveniently to wash hands, food, elbow or sensor operated taps?			
	iii) Are germicidal soaps/soap solution and hand drying facility provided?			
	iv) Are notice/instructions prominently pasted in toilet directing employees to wash their hands on entry and re-entry into the food handling areas?			
	v) Are the refuse receptacles self closing type maintained in a manner to protect from contaminations?			

Sl No.	*Requirements*	*Answers*		*Remarks*
		Applied	Not Applied	
(1)	(2)	(3)	(4)	(5)
J.	**Personnel Hygiene and Habits**			
i)	Is any individual assigned to supervise overall sanitation of plant and personnel?			
ii)	Is there any person responsible for day-to-day monitoring of health and hygiene?			
iii)	Have the employees in processing, packing and maintenance been medically examined?			
iv)	Are the personnel with infections diseases, skin infection and open lesion or any other source of microbial contamination excluded from working in process/packing areas?			
v)	Are personnel hygiene practices regularly maintained and monitored?			
	1) Clean outer garments — protective clothing?			
	2) Personal cleanliness — finger nails?			
	3) Head cover — hair restraints, caps, head bands, beard cover			
	4) No tobacco in any form — smoking, chewing			
	5) No eating at work stations			
vi)	Are protective clothing stored on the premises and not allowed to be used for outside wear			
vii)	Are there clear legible notices defining limits of no smoking areas such as "NO SMOKING BEYOND THIS POINT" displayed?			
viii)	Are personnel imparted regular training or hygienic food handling, processing food and personal hygiene?			
ix)	Are unsecured jewellery and other objects, such as, wrist watches, cufflinks, ear rings, glass bangles, stick BINDIS removed at work?			

ANNEX D

(*Clauses* 5.3 *and* 5.3.1)

STANDARDS ON METHODS OF RESIDUE ANALYSIS

Sl No.	*Characteristic*	*Test Methods*	
		USEPA	AOAC/ISO
(1)	(2)	(3)	(4)
i)	DDT (o,p & p,p-isomers of DDT, DDE & DDD)	508	AOAC 990.06
ii)	γ-HCH (Lindane)	508	AOAC 990.06
iii)	α, β and δ-HCH	508	AOAC 990.06
iv)	Endosulfan (α, β and Sulphate)	508	AOAC 990.06
v)	Monocrotophos	8141A	–
vi)	Ethion	1657A	–
vii)	Chlorpyrifos	525.2, 8141A	–
viii)	Phorate (Phorate and its oxygen analogue that is phorate sulphoxide and phorate sulphone)	8141A	–
ix)	2,4-D	515.1	–
x)	Butachlor	525.2, 8141A	–
xi)	Isoproturon	532	–
xii)	Alachor	525.2, 507	–
xiii)	Atrazine	525.2, 8141A	–
xiv)	Methyl Parathion (Methyl Parathion and its oxygen analogue that is methyl-paraoxon)	8141A	ISO 10695
xv)	Malathion (Malathion and its oxygen analogue that is malaoxon)	8141A	–
xvi)	Aldrin and dieldrin	525.2	AOAC 990.06

NOTE — Test methods are for guidance and reference for testing laboratory. In case of two methods, USEP. method shall be the reference method.

ANNEX E

(*Clause* 8)

SAMPLING PLAN FOR PACKAGE DRINKING WATER

E-1 GENERAL REQUIREMENTS OF SAMPLING FOR CONTAINERS UP TO AND INCLUDING 2 LITRES

E-1.1 In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed as far as possible:

a) Sample shall be drawn in original sealed bottle/ container and kept in protected place not exposed to damp air, dust or soot; and

b) Each bottle/container in original shall be sealed and marked with full details of sampling.

E-1.2 Scale of Sampling

E-1.2.1 *Lot*

The quantity of packaged drinking water of the same type belonging to the same batch of manufacture and packed in a day, shall constitute a lot.

E-1.2.2 For ascertaining the conformity of the material to the requirements of the standard, samples shall be tested from each lot separately

E-1.2.3 The number of bottles to be selected from a lot shall depend on the size of the lot and shall be according to Table 5. Separate bottle(s) shall be drawn for testing for the microbiological requirements.

Additional bottles may be drawn if required for carrying out complete testing or when the samples are required to be sent in more than one laboratory.

Table 5 Scale of Sampling

(*Clause* E-1.2.3)

Sl No.	No. of Bottles in the Lot	Number of Samples
(1)	(2)	(3)
i)	Up to 5 000	3
ii)	5 001 to 10 000	5
iii)	10 001 to 15 000	7
iv)	15 001 and above	9

E-1.2.3.1 The bottles shall be chosen at random from the lot. In order to ensure the randomness of selection, procedure given in IS 4905 shall be followed.

E-1.2.4 Initially the number of cartons equal to the number of bottles to be taken from the lot (according to col 3 of Table 5), shall be chosen at random. These cartons thus selected shall be opened and the bottles in these cartons examined visually for the condition of packing, external appearance and the fill. The lot shall be considered satisfactory for inspection of other characteristics given in the standard, if all the bottles in the cartons opened are found satisfactory for these characteristics.

E-1.2.5 In case any defective bottle is found according to **E-1.2.4**, twice the number of cartons shall be opened and the bottles examined for these characteristics. If no defective bottle is found; the lot shall be considered satisfactory for inspection of other characteristic given in the specification.

E-1.3 Preparation of Test Samples

E-1.3.1 From each of the cartons opened according to **E-1.2.4**, three bottles shall be taken from its different layers so as to obtain three times the required number of bottles in the sample (*see* col 3 of Table 5).

E-1.3.2 In case the number of cartons to be opened is according to **E-1.2.4**, the number of cartons equal to the number of bottles in the sample shall be taken at random from these cartons and then the required number of bottles picked up according to **E-1.3.1**.

E-1.3.3 The sample bottles selected as in **E-1.3.1** or **E-1.3.2** shall be divided at random into three equal sets and labelled with all the particulars of sampling. One of these sets of sample bottles shall be for the purchaser, another for vendor and the third for referee.

E-1.3.4 *Referee Sample*

Referee sample shall consist of a set of sample bottles marked for this purpose and shall bear the seals of the purchaser and the supplier. These shall be kept at a place agreed to between the purchaser and the supplier so as to be used in case of dispute between the two.

E-1.4 Criteria for Conformity

The lot shall be declared as conforming to the requirements of the standard if all the requirements are complied with.

E-2 GENERAL REQUIREMENTS OF SAMPLING FOR ABOVE 2 LITRES CONTAINERS

E-2.1 In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed as far as possible:

a) Sample shall be drawn in original sealed container and kept in protected place not exposed to damp air, dust or soot; and

b) Each container in original shall be sealed and marked with full details of sampling.

E-2.2 Scale of Sampling

E-2.2.1 *Lot*

The quantity of packaged drinking water of the same type belonging to the same batch of manufacture and packed in a day, shall constitute a lot.

E-2.2.2 For ascertaining the conformity of the material to the requirements of the standard, samples shall be tested from each lot separately.

E-2.2.3 The number of containers to be selected from a lot shall depend on the size of the lot and shall be drawn at random, according to Table 6. Separate container(s) shall be drawn for testing for the microbiological requirements. In order to ensure the randomness of selection, procedure given in IS 4905 shall be followed.

Table 6 Scale of Sampling

(*Clause* E-2.2.3)

Sl No.	No. of Bottles in the Lot	Number of Samples
(1)	(2)	(3)
i)	0-500	5
ii)	501-1 200	8
iii)	1 201-3 200	13
iv)	3 201 and above	20

E-2.2.4 These containers shall first be examined visually for the condition of packing, external appearance and the fill. The lot shall be considered satisfactory for inspection of other characteristics given in the standard, if all the containers are found satisfactory for these characteristics.

E-2.2.5 In case any defective container is found according to **E-2.2.4**, twice the number of containers shall be examined for these characteristic(s). If no defective container is found, the lot shall be considered satisfactory for inspection of other characteristics given in the standard.

E-2.3 Preparation of Test Samples

E-2.3.1 Out of the containers selected according to **E-2.2.3**, any three containers shall be selected at random and stored separately.

E-2.3.2 Each of the sample containers selected as in **E-2.3.1** shall be divided at random into three equal sets and labelled with all the particulars of sampling. One of these sets of sample containers shall be for the purchaser, another for vendor and the third for referee.

E-2.3.3 *Referee Sample*

Referee sample shall consist of a set of sample containers marked for this purpose and shall bear the seals of the purchaser and the supplier. These shall be kept at a place agreed to between the purchaser and the supplier so as to be used in case of dispute between the two.

E-2.4 Criteria for Conformity

The lot shall be declared as conforming to the requirements of the standard, if all the requirements are complied with.

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