

Outlines of Hazardous Materials Safety Techniques Association

*Focused on Safety
Certain Technology*

About the Association

This Association is authorized to assess outdoor tank storage facilities in accordance with the Fire Service Act under the commission of the mayor of municipality or other relevant authority as well as for providing testing, inspection, and technical assistance services for storage, handling, or transportation of hazardous materials to ensure hazardous material safety and security.

This Association provides technical assessment services on outdoor tank storage facilities from a fair and impartial standpoint.

Our officials and employees have a confidentiality obligation regarding the information obtained through the performance of duties and are also deemed to be those engaged in public services for application of criminal punishments stipulated pursuant to the Penal Code or other laws.

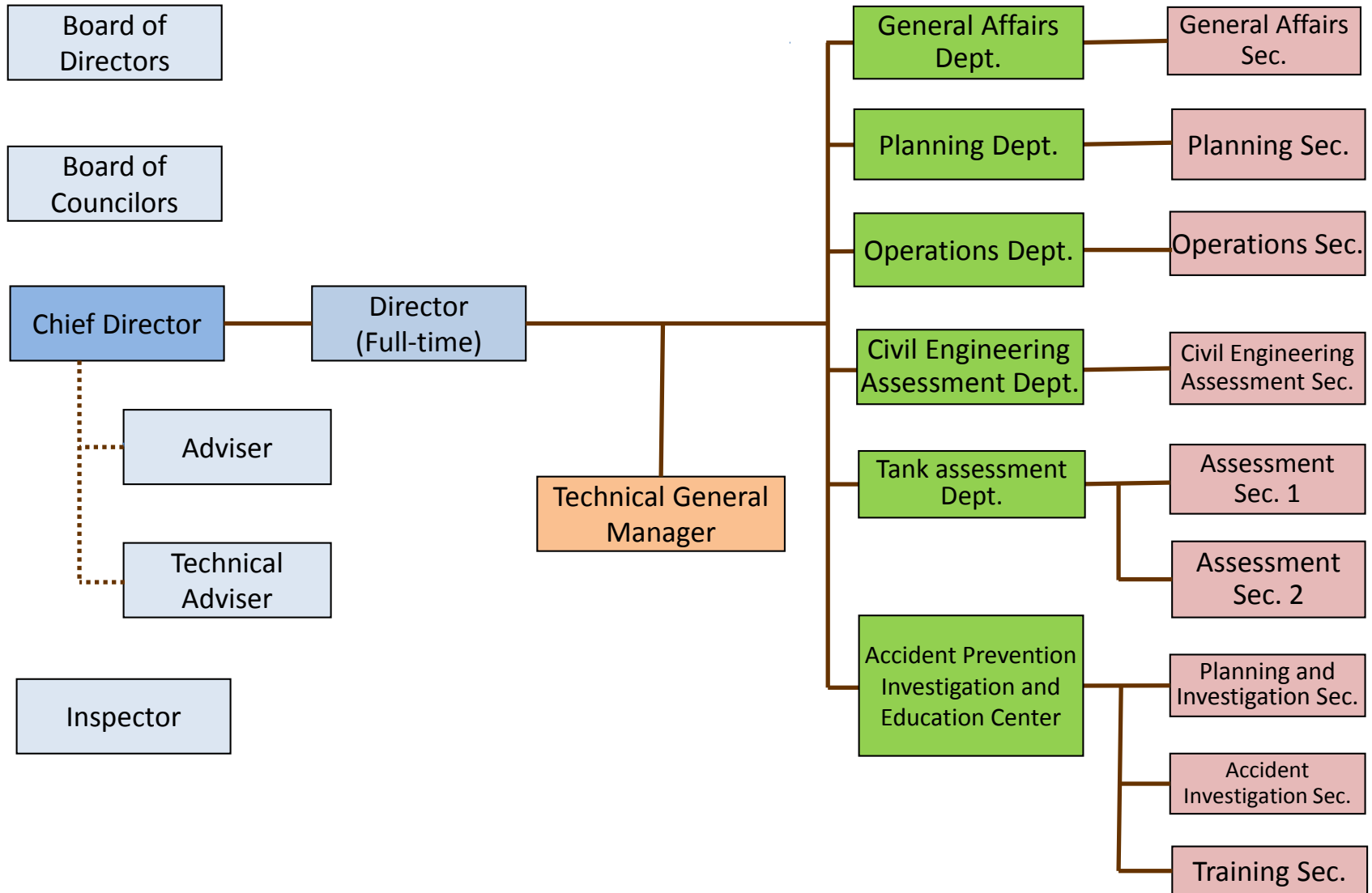
This Association performs the operations by obtaining human resource/technical support provided by the national or local governments

The inspectors who perform assessment or other pertinent duties possess specialized skill qualifications as specified by the statutory and regulatory criteria.

Major footprints

- December 1974 A large quantity of heavy oil spilled from outdoor fuel storage facility of Mizushima Refinery
- December 1975 Act on the Prevention of Disasters in Petroleum Industrial Complexes and Other Petroleum Facilities was enacted during the 76th Diet session
(Supplementary resolution was adopted for strengthening of petroleum tank-related foundation, structural, and other associated regulations and establishment of the inspection system and other related matters during the joint regional administrative committee)
- May 1976 Partial revision for the Fire Service Act was passed by the 77th Diet session
(The major elements include but are not limited to matters related to establishment of Hazardous Materials Safety Techniques Association, matters related to establishment of inspection requirements prior to the final inspection, matters related to establishment of inspection requirements concerning safety of outdoor tank storage facilities, and matters related to demonstration of evidence of contractual agreement with the Hazardous Materials Safety Techniques Association for assessment required for obtaining permission of outdoor tank storage facilities, etc.)
- November 1976 Establishment of Hazardous Materials Safety Techniques Association (Authorized corporation)
- February 1977 Initiation of operations of Hazardous Materials Safety Techniques Association
- April 1986 Act for Partial revision of the Fire Service Act and the Fire Defense Organization Act was passed by the 104th Diet session
(In order to promote effective operations of Hazardous Materials Safety Techniques Association, necessary amendments were accomplished, such as minimizing the national government involvement for selection of executive officers, financial management, and other operations; the association has become a “private corporate that was established by special law,” etc.)
- January 1987 Privatization of Hazardous Materials Safety Techniques Association
- December 1994 Initiation of technical support operations for the old law tanks
- April 1999 Initiation of assessment and technical support operations for the semi-specific outdoor tank storage facilities
- April 2000 Initiation of technical support operations related to the individual extension of the internal inspection frequency of the specific outdoor tank storage facilities
- April 2005 Initiation of assessment and technical support operations for single-deck floating roof of the specific outdoor tank storage facilities
- April 2012 Initiation of assessment and technical support operations for floating roof of the specific outdoor tank storage facilities

Organization Chart



Comprehensive operations to ensure safety of hazardous materials

Outdoor tank assessment

Testing and verification

Technical support

Hazardous material identification
testing/Issuance of registration certificate

Accident investigation

Study and research

Safety evaluation

Provision of technical information

Performance evaluation

Hosting seminars and workshops

Outdoor tank assessment

Specific tank

Outdoor tank storage facility having a storage capacity greater than or equal to 1,000 kl

Design review
(Installation and
modification)

Pre-final
assessment

Safety assessment

Semi- specific tank

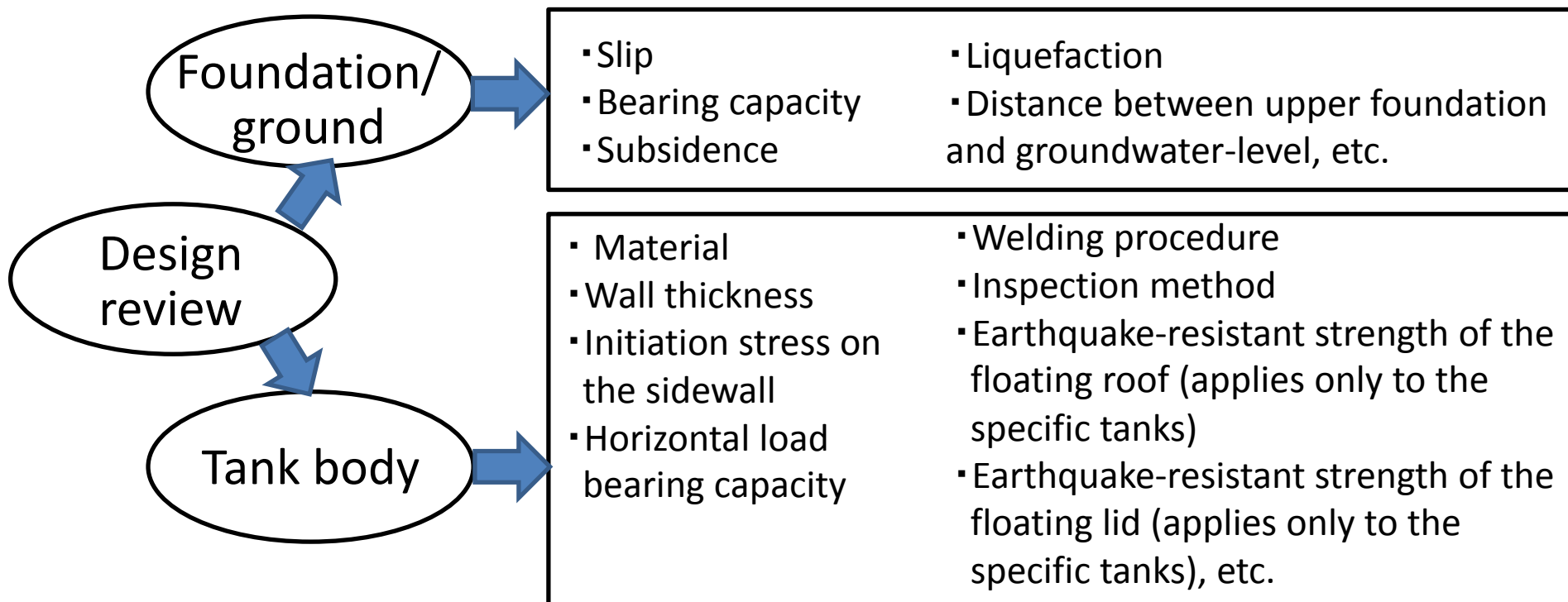
Outdoor tank storage facility having a storage capacity greater than or equal to 500 kl, but less than 1,000 kl

Design review
(Installation and modification)

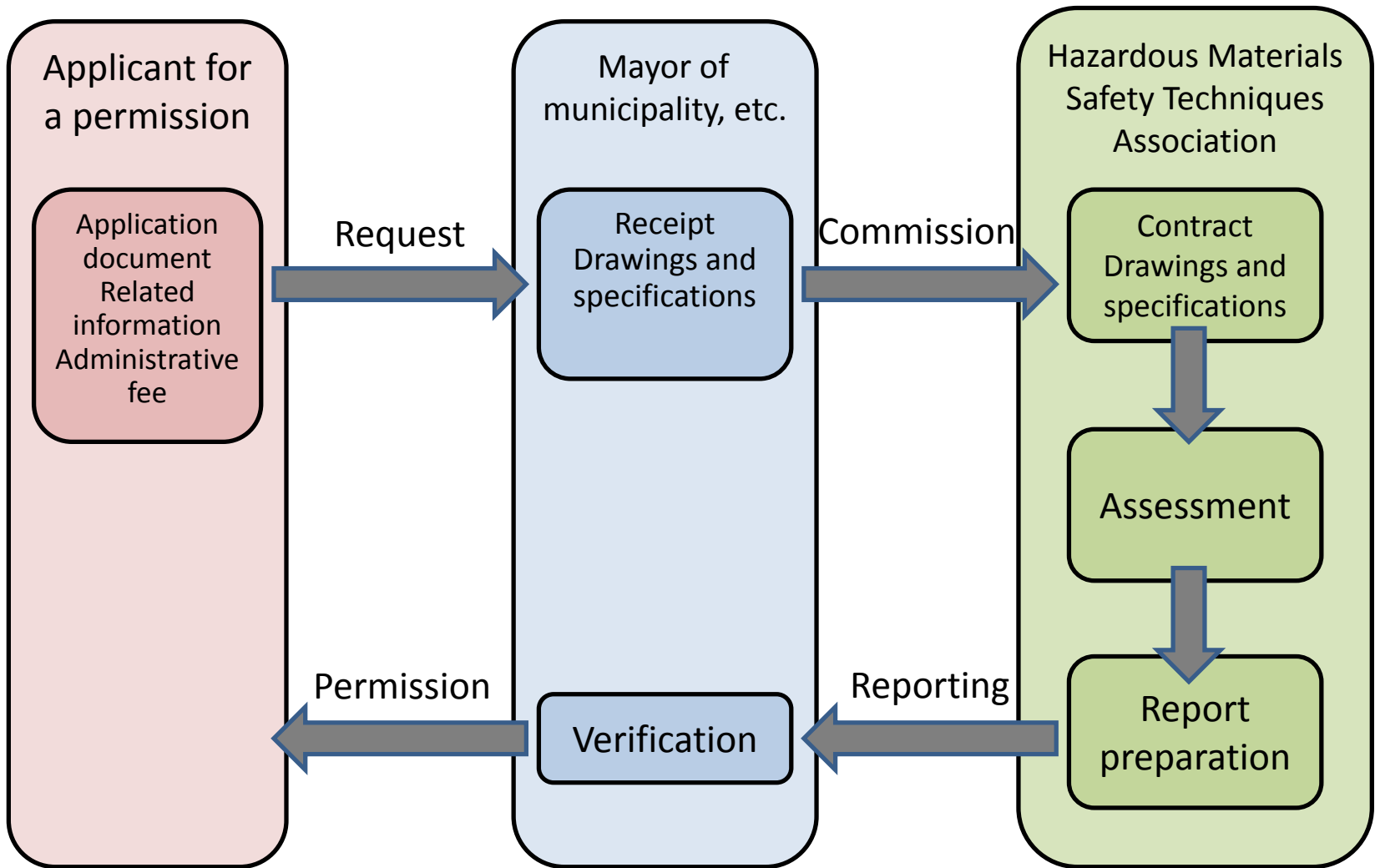
Tank design review (installation and modification)

When installing a specified tank or specified semi-tank, permission must be obtained through assessment that verifies that the foundation/ground and the tank itself satisfy the technical standards specified by the Fire Protection Law.

This permission is governed by the mayor of municipality or other relevant authority, and this association provides design and assessment services in response to a request from the mayor of municipality or other relevant authority. This Association also provides assessment services when a physical modification is required for the foundation/ground and the tank itself.



Design Review Workflow

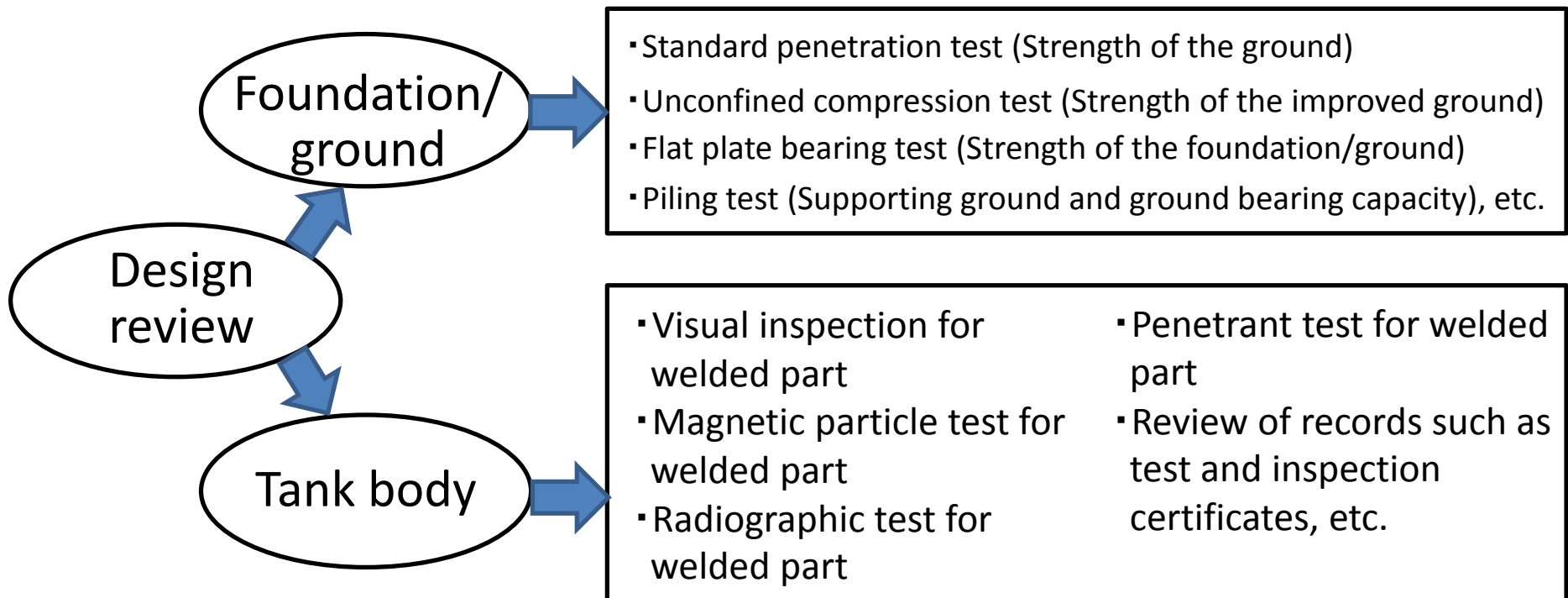


New Tank Installation Work (Sidewall Assembling Phase)

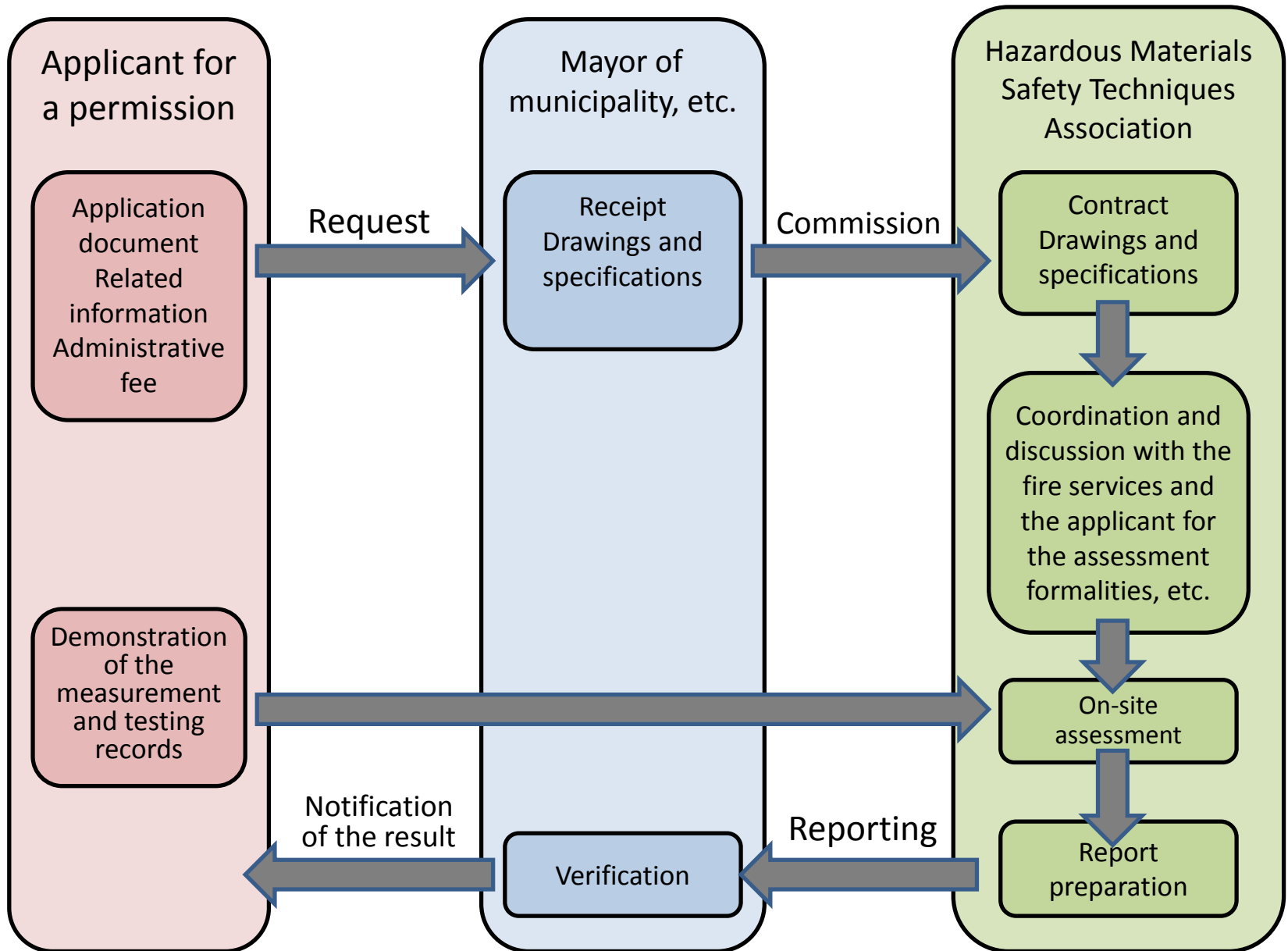


Pre-final assessment

Pre-final inspection to be conducted by the relevant municipal authority is required at each required phase of the construction work for the construction work that requires permission for installation or modification of the specific tank. This association provides pre-final assessment services in response to a request from the mayor of municipality or other relevant authority.



Pre-final Assessment Workflow



Conducting Standard Penetration Test (Strength of the ground)



Conducting Flat Plate Bearing Test (Strength of the foundation)



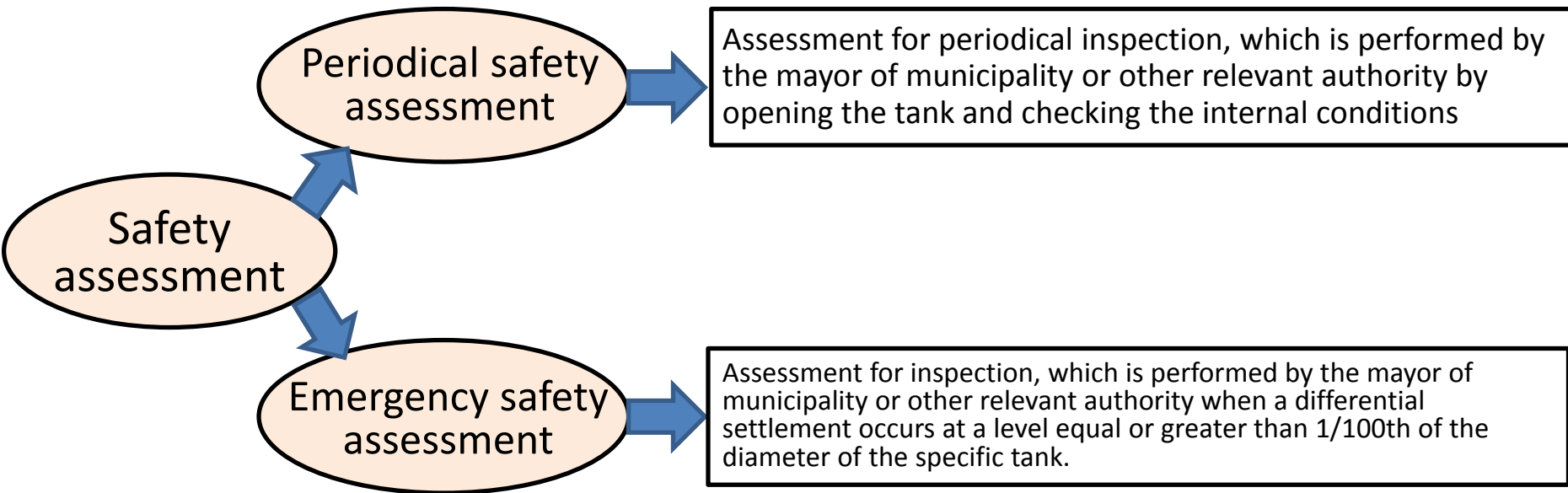
Visual Inspection for Welded Part on Sidewall of the Tank



Safety assessment

The specific tanks with a storage capacity of 10,000 kl or more are required to complete periodical inspection, which is performed by the mayor of municipality or other relevant authority by opening the tank and checking the internal conditions. This Association provides assessment services for the wall thickness and welded parts on the bottom of the tank through the magnetic particle test or other applicable test method in response to a request from the mayor of municipality or other relevant authority.

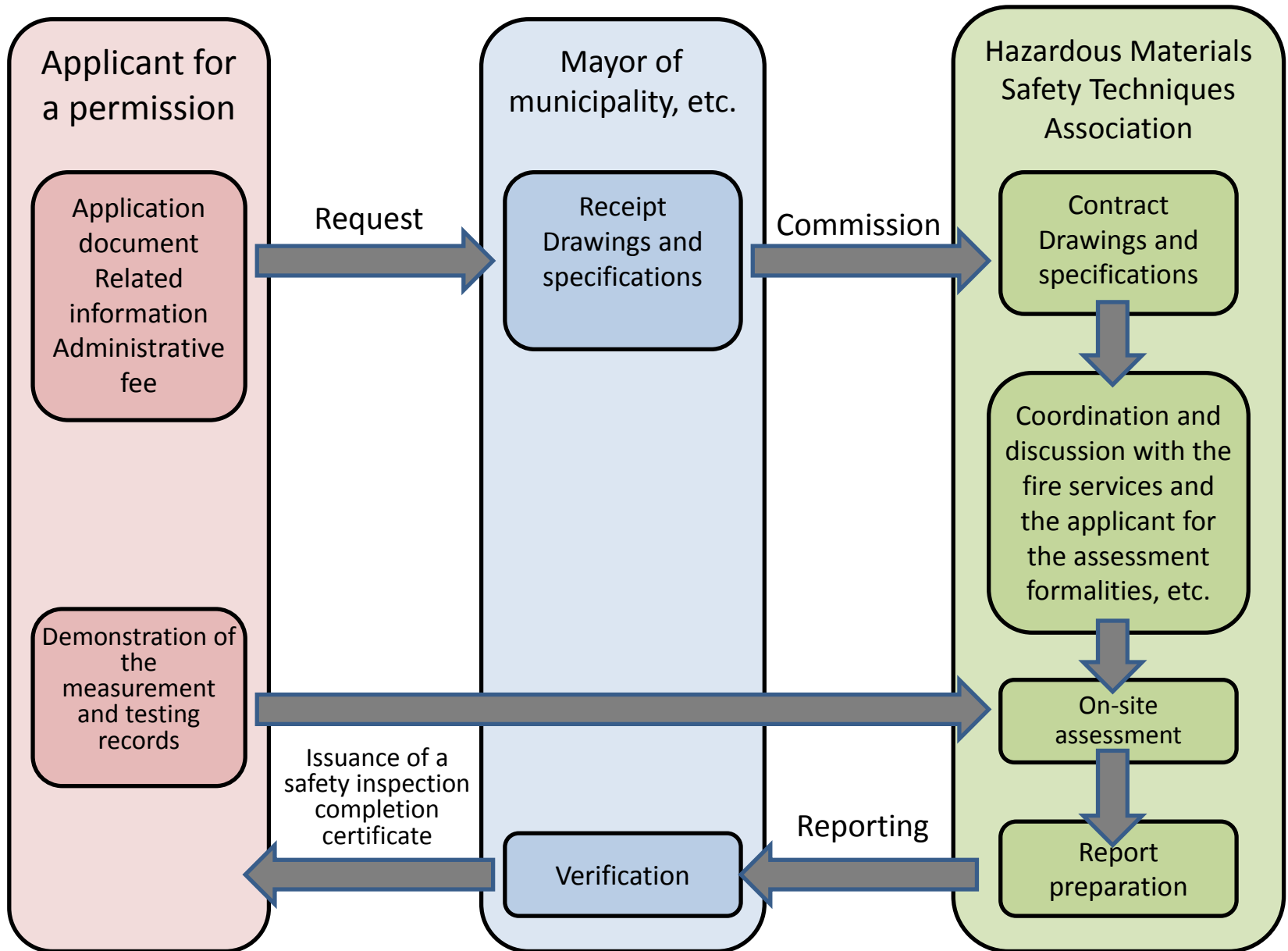
The safety assessment consists of periodical safety inspection and emergency safety inspection.



Elements of safety assessment

- Ultrasonic plate thickness measurement test for the tank bottom
- Visual inspection for welded part on the tank bottom
- Magnetic particle test for welded part on the tank bottom
- Penetration test for welded part on the tank bottom
- Review of records such as test and inspection certificates, etc.

Safety Assessment Workflow



Implementation of Safety Assessment



Conducting magnetic particle test

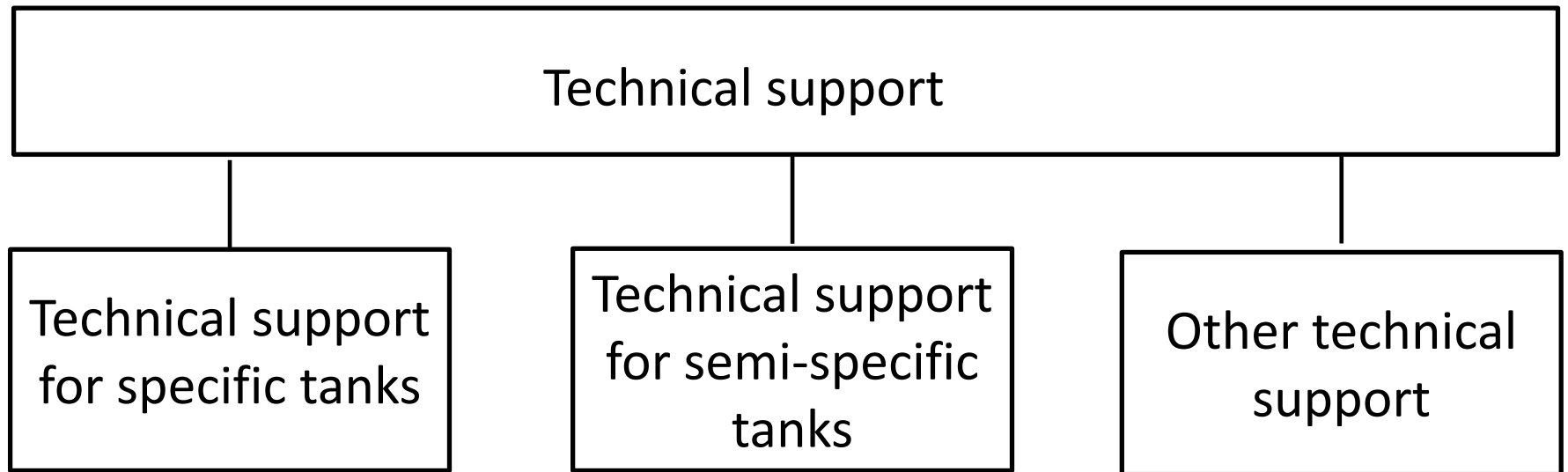


Conducting ultrasonic plate thickness measurement test

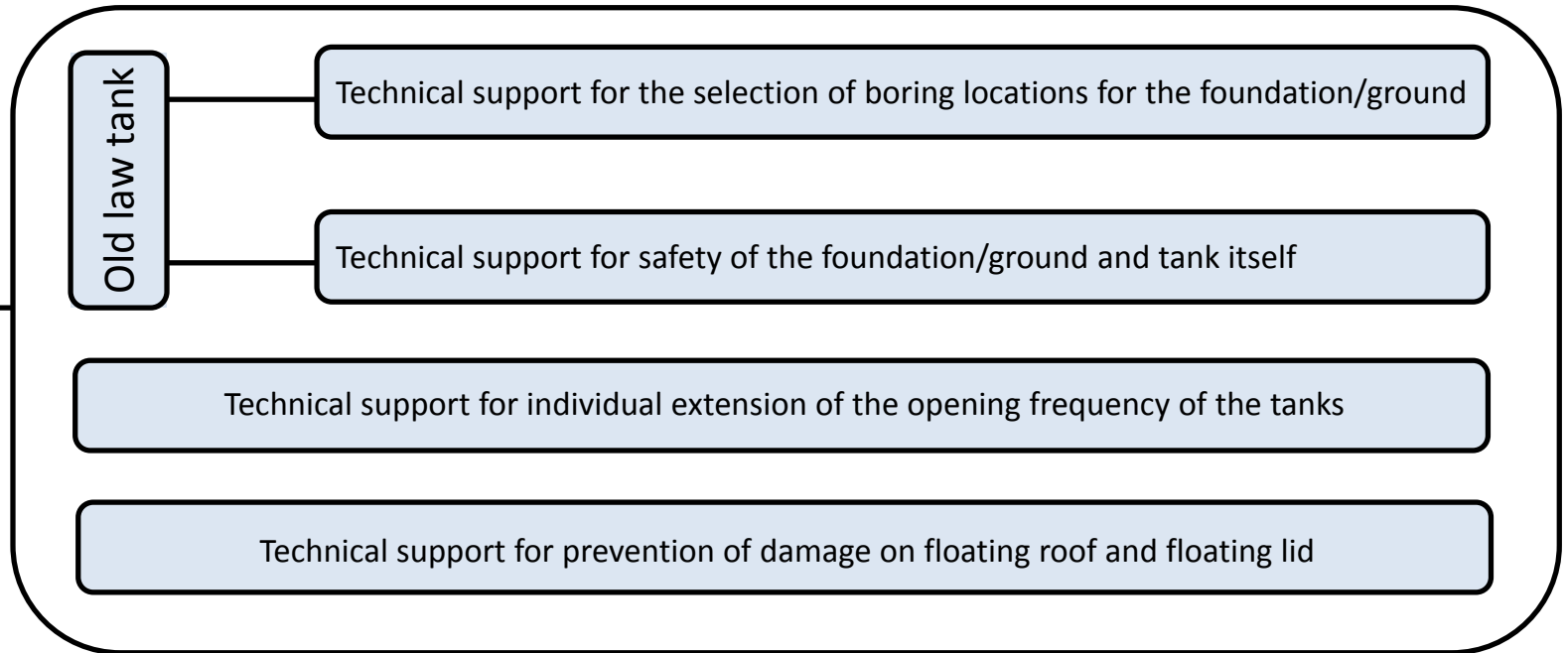
Technical Support

Based on its rich knowledge and accumulated skills, this Association provides technical support services to concerned parties for solutions to their specialized and technical challenges encountered on the hazardous material-related safety measures, etc.

The technical support services currently offered by this association can be classified into three different major categories.



Technical support for specific tanks



*The old law tank means a specific outdoor tank storage facility that was installed in accordance with the technical standards that were in effect before 1977. For the old law tanks, the grace period has already ended, and therefore, actions are taken for suspended tank facilities.

Technical support for semi-specific tanks



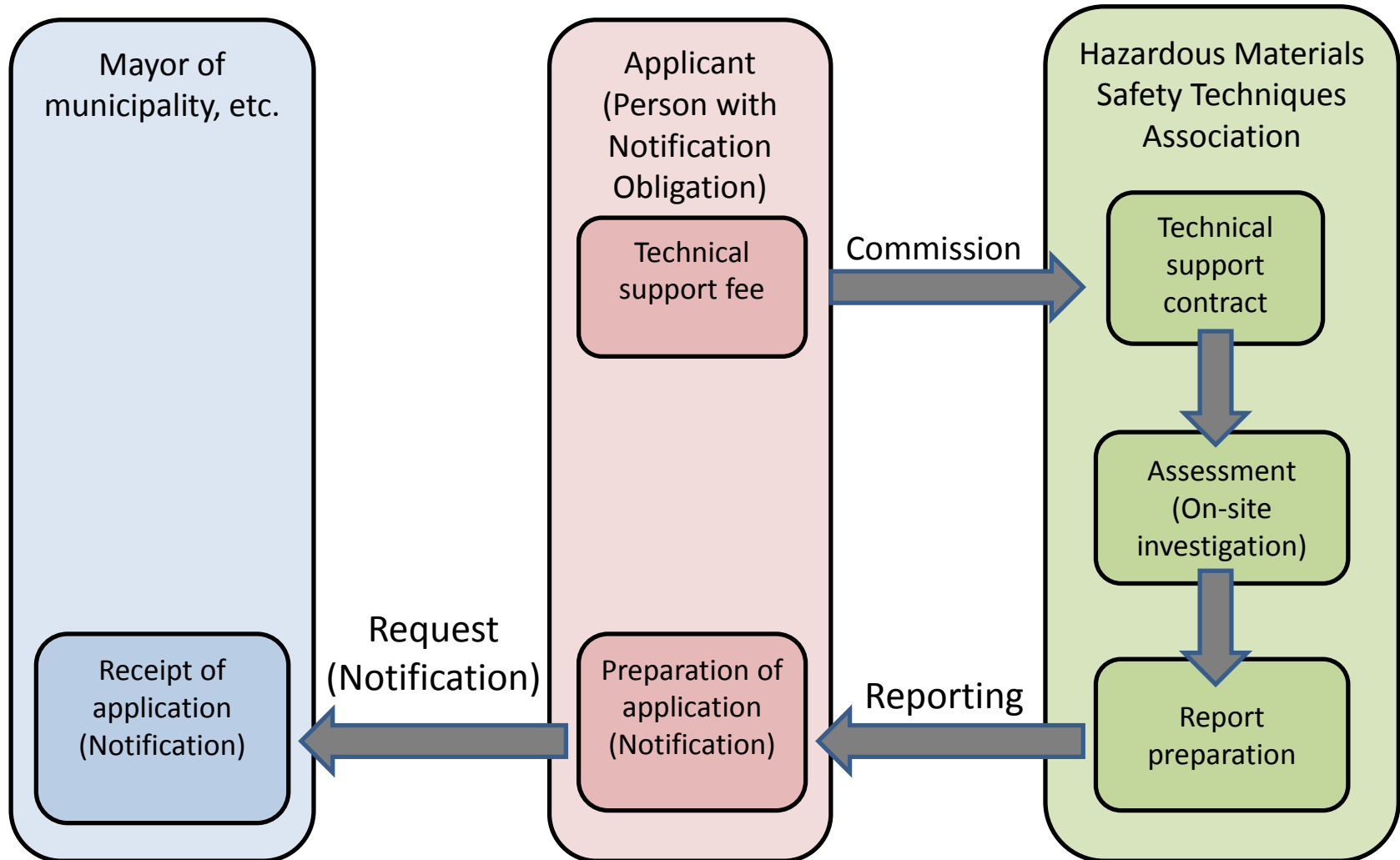
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graph LR; A[Technical support for semi-specific tanks] --- B[Technical support for safety of the foundation/ground and tank itself]; A --- C[Technical support for checking the construction work of the foundation/ground and tank itself];
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The diagram features a green header box at the top left containing the title. A vertical line descends from the bottom of this box and then turns horizontally to the right, connecting to a large rounded rectangle. Inside this rounded rectangle are two smaller, light blue rounded rectangles stacked vertically, each containing a specific technical support task.

Technical support for safety of the foundation/ground and tank itself

Technical support for checking the construction work of the foundation/ground and tank itself

Technical Support Workflow for Specific Tank/Semi-Specific Tank



Other technical support

Technical support for a new tank installation

Technical support for applying safety measures on existing tank

Technical support for applying safety measures on newly constructed fuel storage system

Technical support for fuel containment wall, etc.

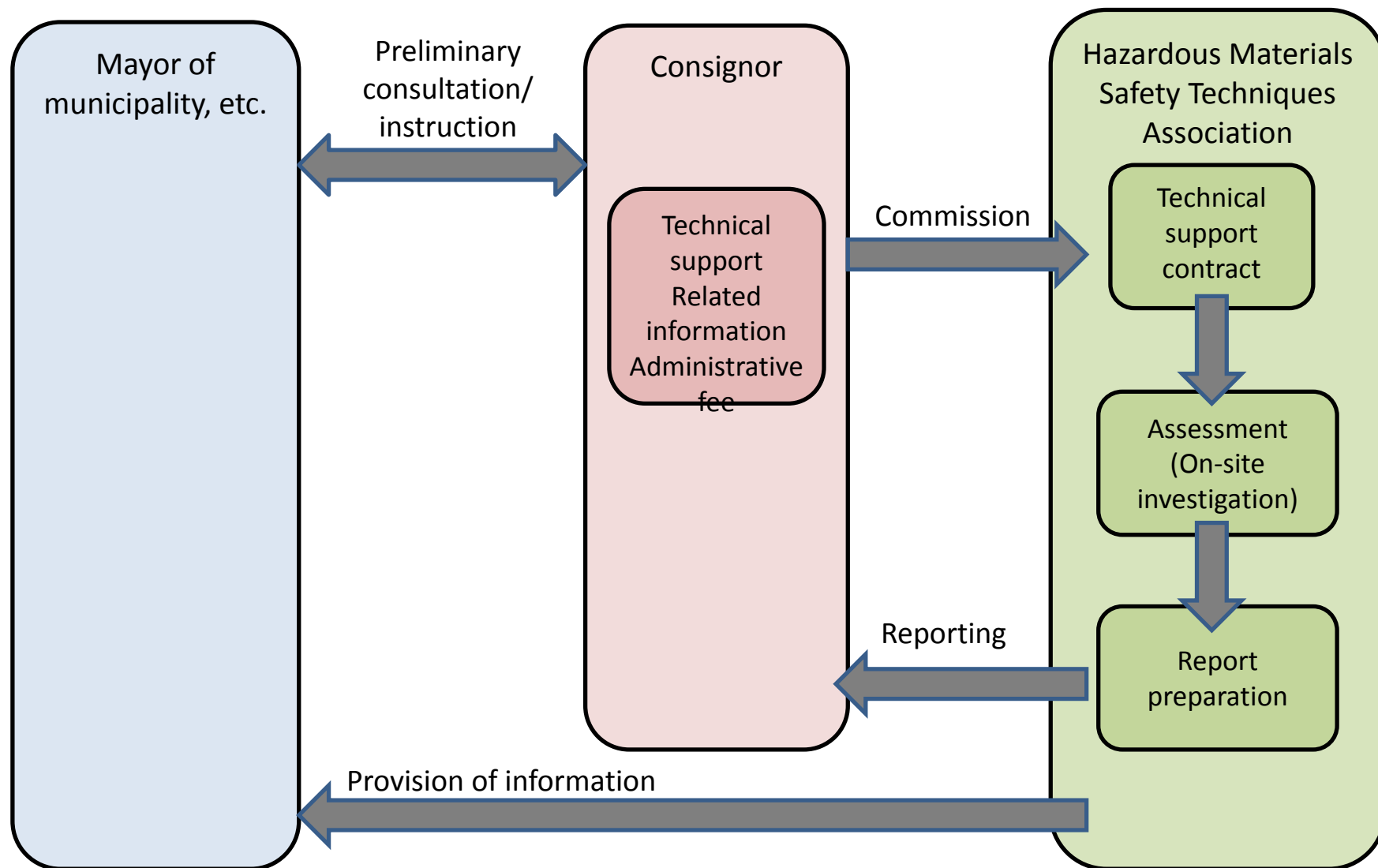
Technical support for welding method verification test

Other hazardous material safety-related technical support

Technical support for foundation/ground improvement method

Technical support is provided for safety measures, safety evaluation, and other related areas that are practiced by organizations whenever an organization finds its necessity or in response to an instruction provided by the mayor of municipality or other relevant authority.

Other Technical Support Workflow

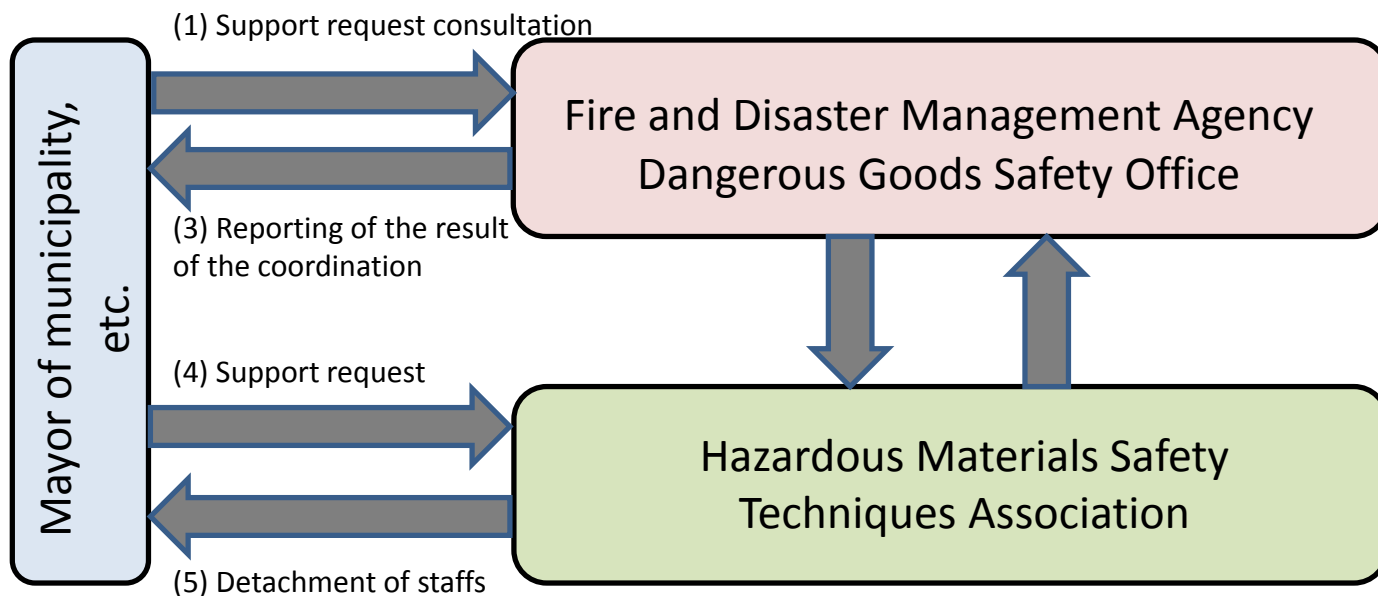


Accident Investigation

Based on the “Act for Partial Revision of the Fire Service Act and the Fire Defense Organization Act” (Act No. 41 of 2008), the mayor of municipality or other relevant authority can investigate cause of accident when hazardous material spill or other accident occurs at a hazardous material facility. Accordingly, “Manual for Investigation of Hazardous Material Spill or Other Accidents” was developed. This manual states that, when investigation is conducted to identify the cause of accident, it is effective to accumulate accident data for hazardous material spill or other incidents and obtain advices from specialized organizations that possess skills and knowledge relevant to identify the cause of accident. Especially for accident investigation for spill from an outdoor tank storage facility, it specifically mentions that support can be obtained from Hazardous Materials Safety Techniques Association, which is a fair and impartial third party organization and possesses a variety of technical expertise.

Based on these facts, a support system has been established for mayors of municipalities and is maintained at the Accident Prevention Investigation and Education Center of this Association. Additionally, this Association also provides technical support services for organizations to identify cause of accident when accident investigation request is received.

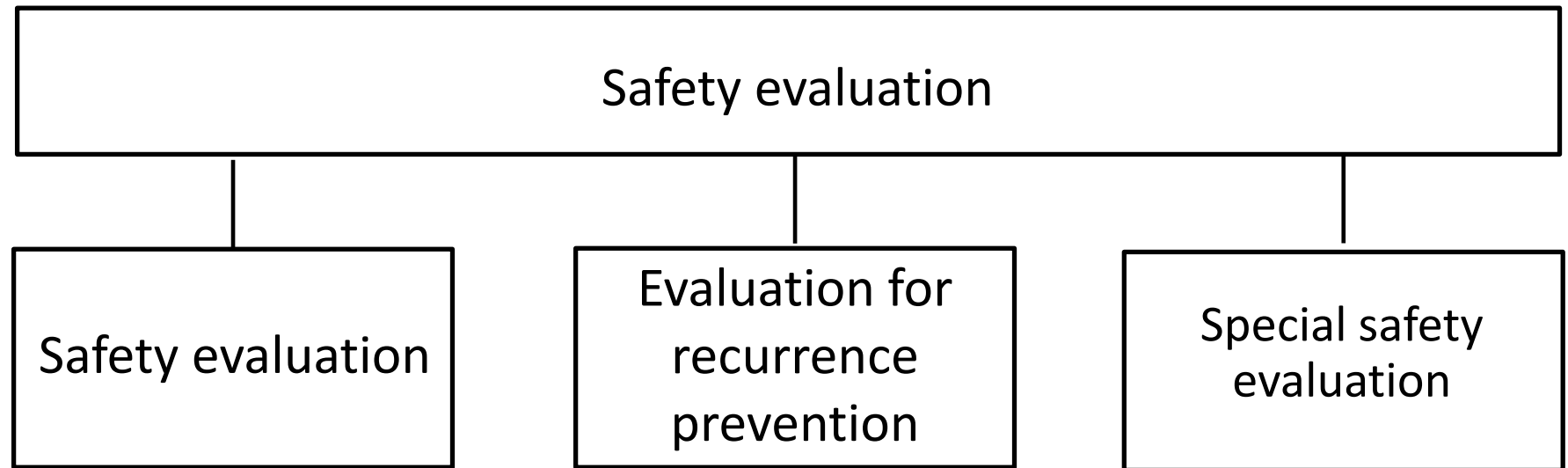
Support request workflow for accident investigation



Safety Evaluation

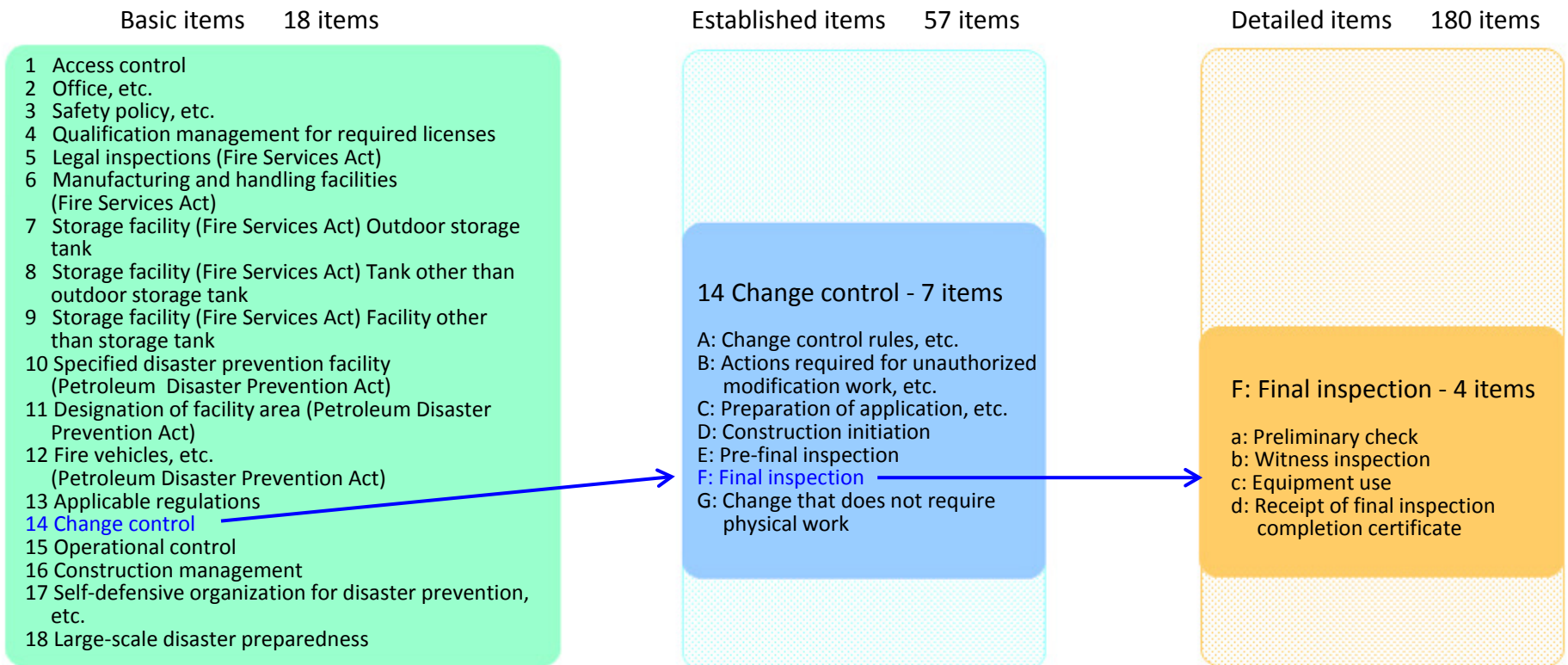
For the efforts taken by organizations that own hazardous material facilities or the like for their self-imposing security measures, this Association provides safety evaluation services from a third party perspective by checking the operations and maintenance of hazardous material facilities, the specified disaster prevention facilities, self-defensive organization for disaster prevention, etc.

Additionally, evaluation is also performed for the level of safety for recurrence prevention measures taken in response to an accident.

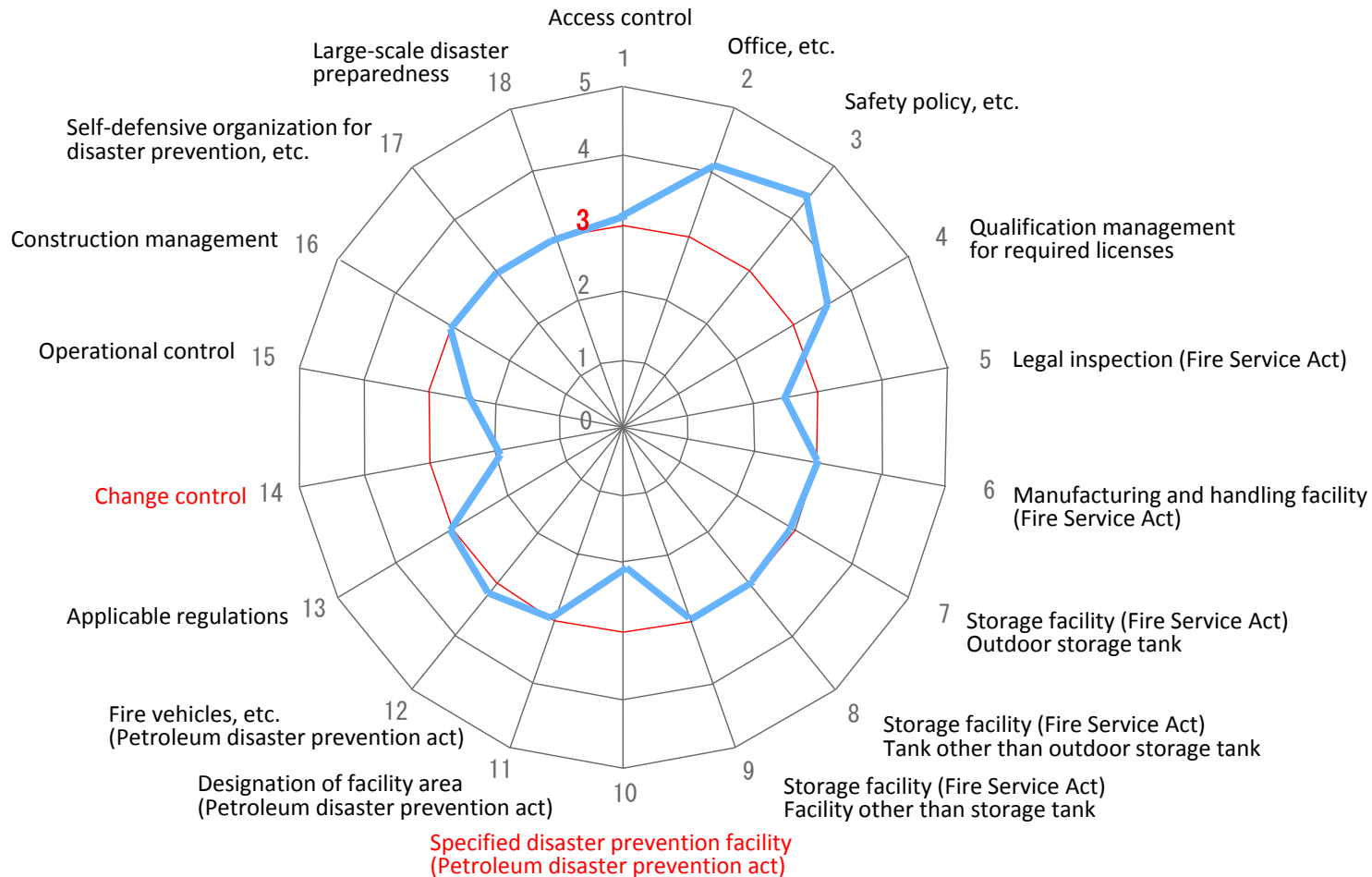


Safety evaluation

For self-imposed safety control systems that are instituted by organizations that own hazardous material facilities, our evaluators visit the site and conduct examinations and evaluations for all or applicable elements of the 18 basic check items through review of the existing site conditions, documentation, or pertinent information. The evaluators are the employees of this Association, who have working experience in areas involved in hazardous material regulations or the Act on the Prevention of Disasters in Petroleum Industrial Complexes and Other Petroleum Facilities, and perform evaluations from the points of view of fire prevention professionals.



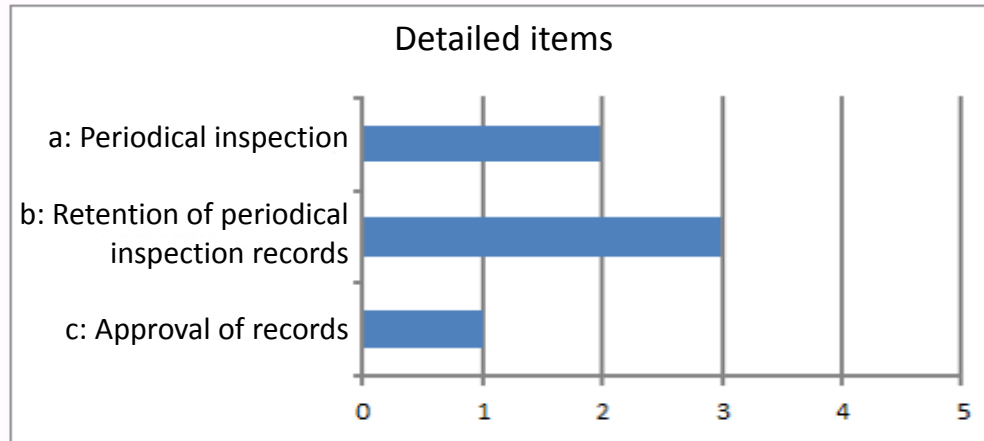
Example of Evaluation Result for Basic Check Item, Radar Chart



○ Comments (Basic items in general)

Average score was 2.9. Overall, the result was below the standard score of 3.0. However, the result indicates that a score of 3 points or higher was obtained for more than half of the check items and a significantly low score was given only for a certain items including “10. Specified disaster prevention facility (Petroleum disaster prevention act)”, “14. Change control”, etc. It is believed that safety of the entire facility will be improved when improvement will be made to the areas where the score was significantly lower than the standard score.

Example of evaluation result for 5 Legal inspection (Fire Service Act)



Comments (Legal inspection (Fire Service Act))

A: Periodical inspection

In the record of the periodical inspection, there were some cases where entry fields for the date of action taken and details of actions taken were left blank, although a “△” mark was entered in the inspection result entry field and a summary of the deficiency was annotated.

For these cases, the action statuses must be checked, and it is also important to establish a mechanism that ensures the status of actions taken when a deficiency is identified during the inspection.

B: Retention of periodical inspection records

More than three years of records were maintained. Records are properly retained.

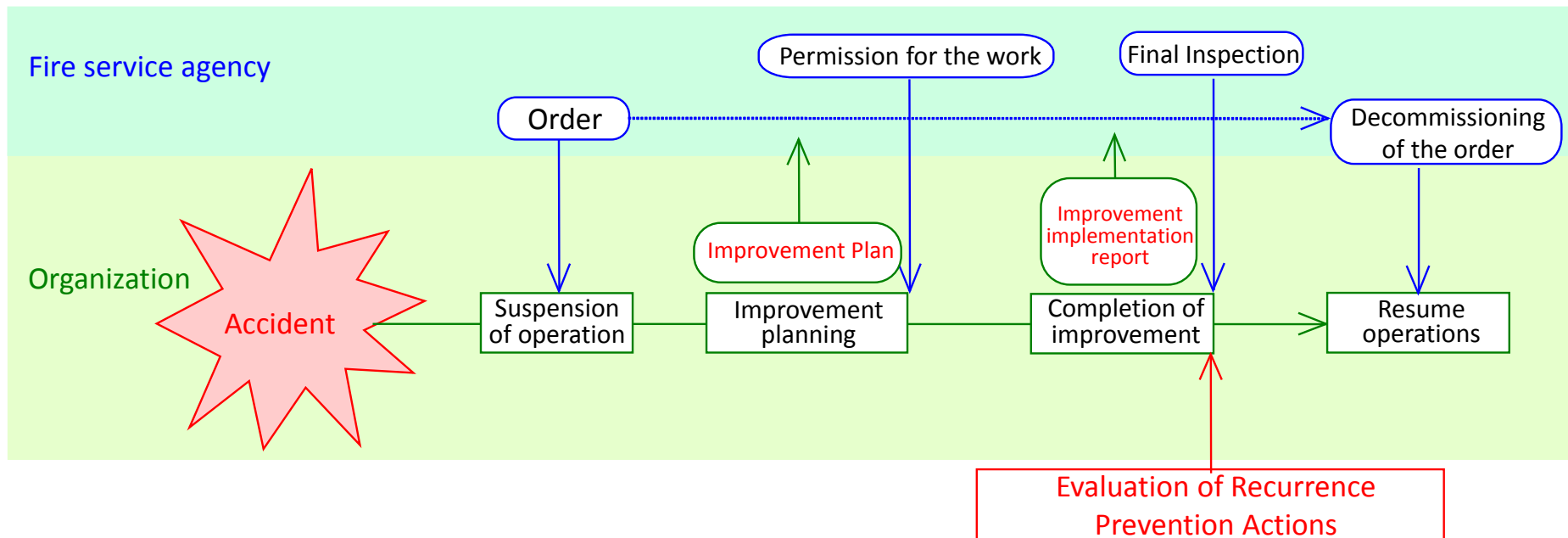
C: Approval of records

In the periodical inspection record sheets, there was a case where an approval was not obtained from the responsible department supervisor.

The periodical inspection means not only to satisfy the legal or regulatory requirements, but also is an important inspection from the operations and maintenance perspectives for hazardous material facilities. Therefore, it is important to obtain an approval from the responsible department supervisor, and that the information is shared within the site through circulation of the information among all concerned departments to ensure that prompt actions can be taken in response to a deficiency on equipment or facility.

Evaluation for recurrence prevention

When a fire service agency implements an order of suspension of use due to an occurrence of fire/explosion, hazardous material spill, or other accident, the subject organization is required to take recurrence prevention measures as illustrated below in order to resume the operations. Under the evaluation for recurrence prevention, our evaluators visit the site and conduct examinations and evaluations of the safety through review of the recurrence prevention-related plans, system, etc.



Special safety evaluation

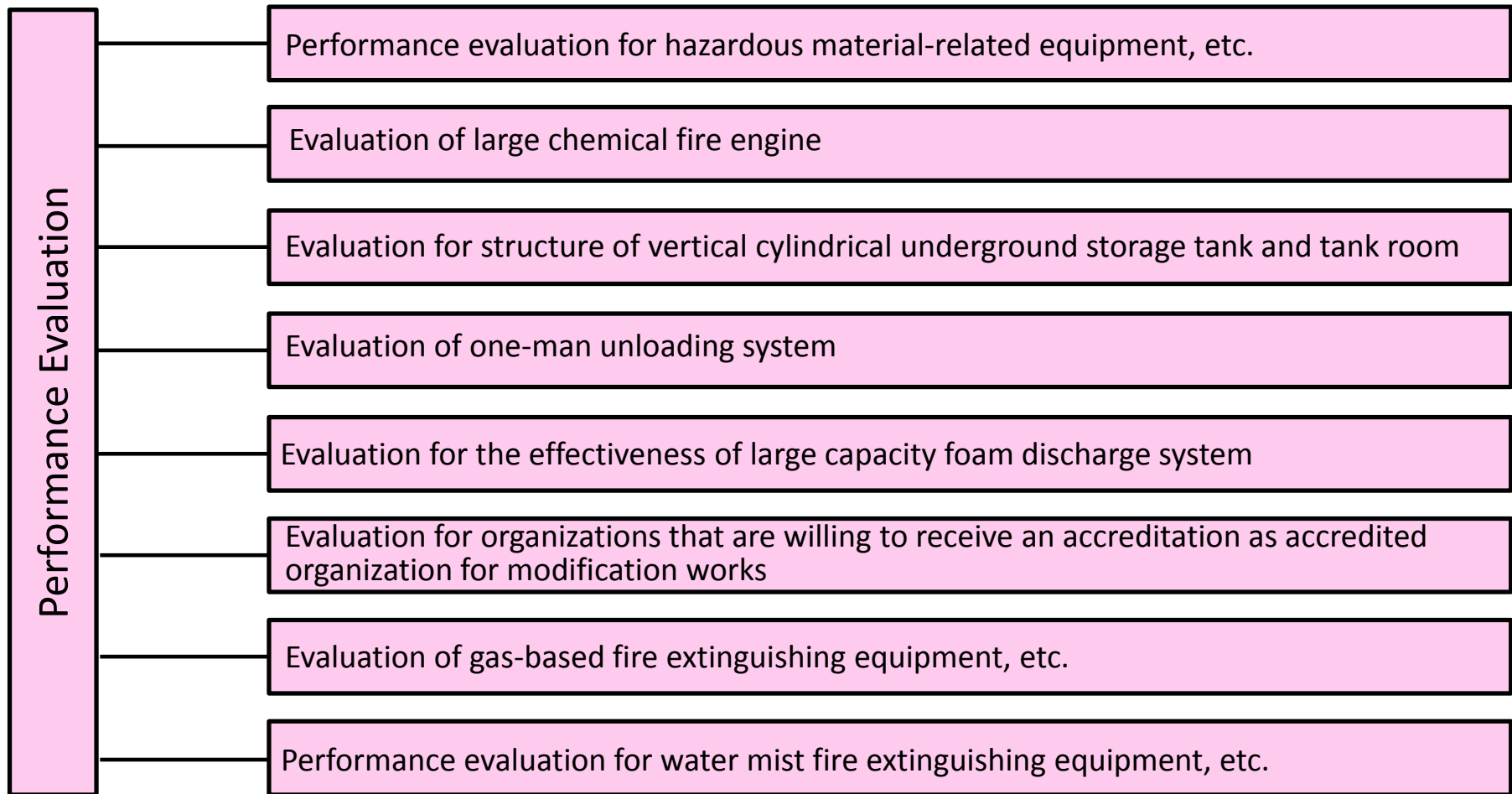


In addition to the safety evaluation and evaluation for recurrence prevention, this Association conducts examinations and evaluations according to the needs on safety of any specific facilities within the site or self-imposed safety control system, etc.

One example of such evaluations is examinations and evaluations of work procedures to ensure that the procedures are developed based on the results of risk assessment for non-routine work and are suitable for the risks and hazards associated with the subject work.

Performance Evaluation

This Association provides impartial performance evaluation services to support improvement of the safety measures by applying new technologies/new procedures while corresponding to the advanced technologies related to the storage, handling, or transporting of hazardous materials.



Performance evaluation for hazardous material-related equipment, etc.

Some hazardous material-related equipment, including that which is newly developed by adopting new technologies, is difficult to clearly identify in terms of their effectiveness for the intended purposes under fire prevention or fire fighting activities.

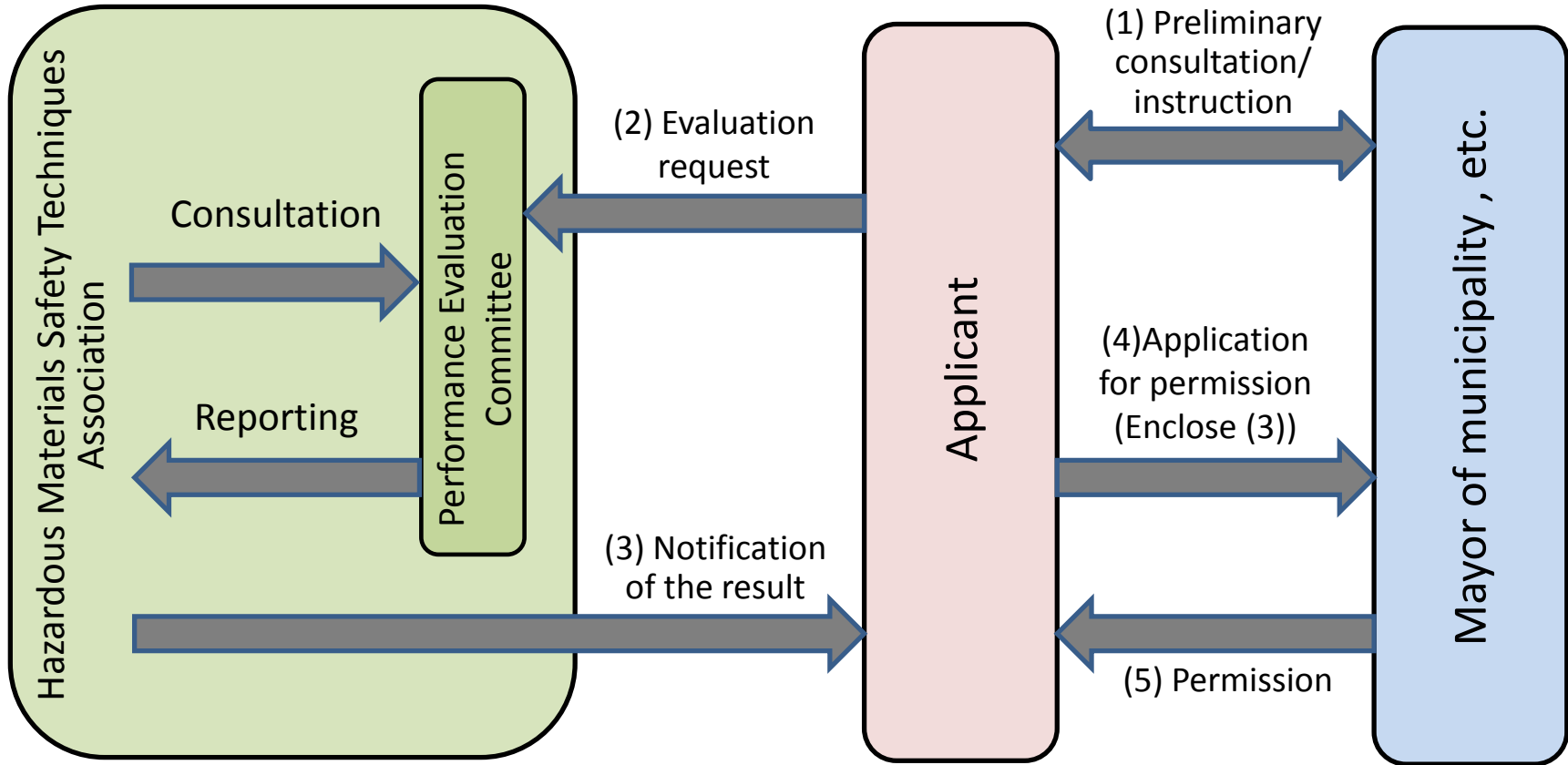


For such equipment, upon request, this Association performs “performance evaluation for hazardous material-related equipment, etc.” in order to promote rational safety measures by properly incorporating the advancement of technology through consultation with the “Performance Evaluation Committee,” which consists of members with relevant knowledge and experience.

Hazardous material-related equipment, etc. that are subject to the performance evaluation

- (1) Equipment whose standards are specifically regulated under the Fire Service Act and its associated regulations.
(Excluding items requiring testing and checking that are currently performed by this Association)
- (2) Those items that are necessary considering the type of hazardous material, quantity, or multiple of the designated quantity, method of storage or handling, surrounding geographical conditions, or other conditions.
- (3) Those items that use unexpected special structure or equipment
- (4) Other equipment items that are used for safety, maintenance, or other purpose related to hazardous materials.

Performance Evaluation Workflow for Hazardous Material-related Equipment, etc.



Evaluation for large chemical fire engine

For the specified organization in the special disaster prevention area having a petroleum industrial complex or other petroleum facility that is required to be equipped with disaster prevention equipment, etc., the required number of disaster prevention personnel can be reduced when such equipment has labor saving functions, etc.

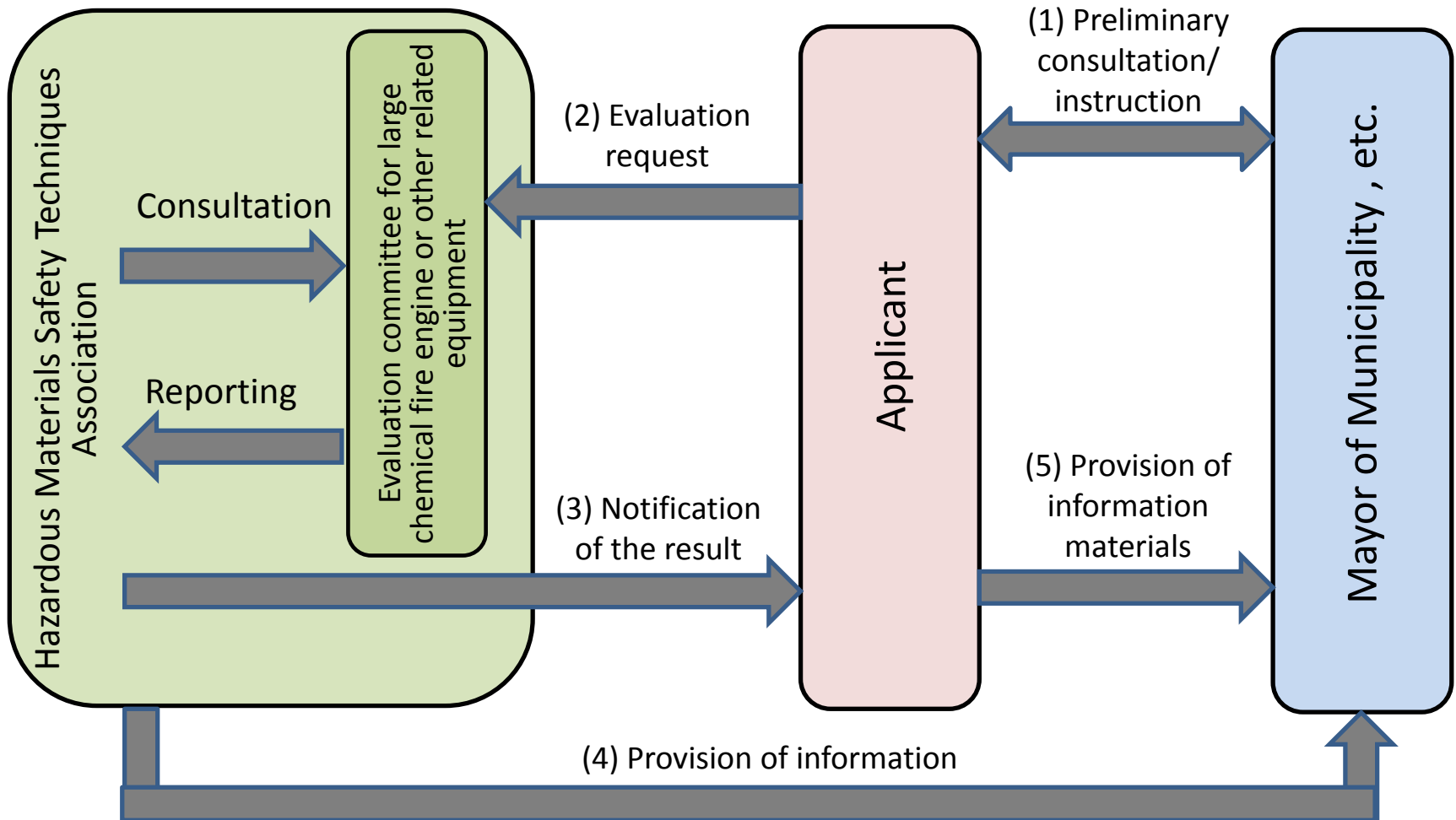


This Association performs evaluations for disaster prevention equipment or other related equipment including a large chemical fire engine or other equipment that contributes to labor saving as well as for those who adopt such equipment in their operations. The purpose of the evaluation is to verify if such equipment satisfies the labor saving requirement and if the intended labor saving outcomes can be obtained effectively. Depending on the type of request, the evaluation is performed through consultation with the “Evaluation Committee for Large Chemical Fire Engine or Other Related Equipment,” which consists of members with relevant knowledge and experience.



Disaster prevention activity using a large chemical ladder fire truck

Evaluation Workflow for Large Chemical Fire Engine



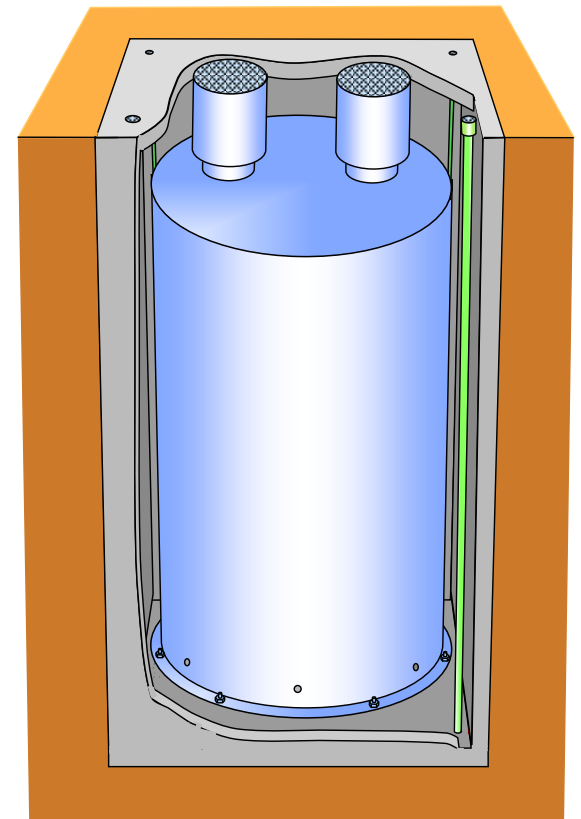
Evaluation for structure of vertical cylindrical underground storage tank and tank room

Based on the ordinance amended in April 2005, except double wall storage tanks, underground storage tanks are required to be designed so as to ensure safety against deformation and stress imposed on the tank body caused by the primary load and a combination of the primary load and secondary load on the underground storage tank. However, initiation stress and acceptable stress specified by ministerial notification or other legislative document are intended for horizontal cylindrical underground tanks.

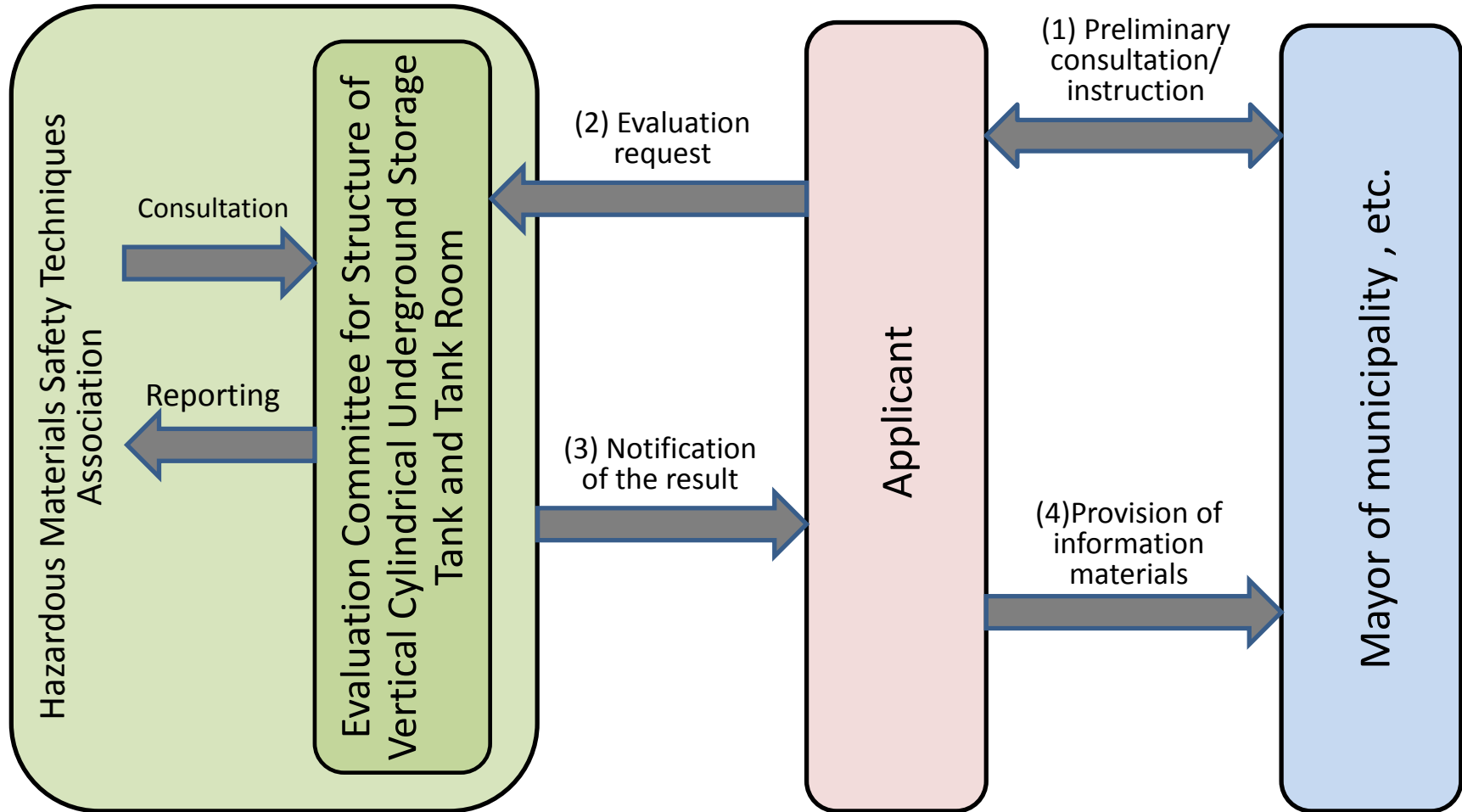


Since application of vertical cylindrical underground storage tanks has been increasing especially in urban areas where only a limited space is available for the purpose of storing fuel oil for emergency generators, this Association conducts evaluations for structural designs of vertical cylindrical underground storage tanks or tank rooms.

Example of a vertical cylindrical underground storage tank



Evaluation Workflow for Structure of Vertical Cylindrical Underground Storage Tank and Tank Room

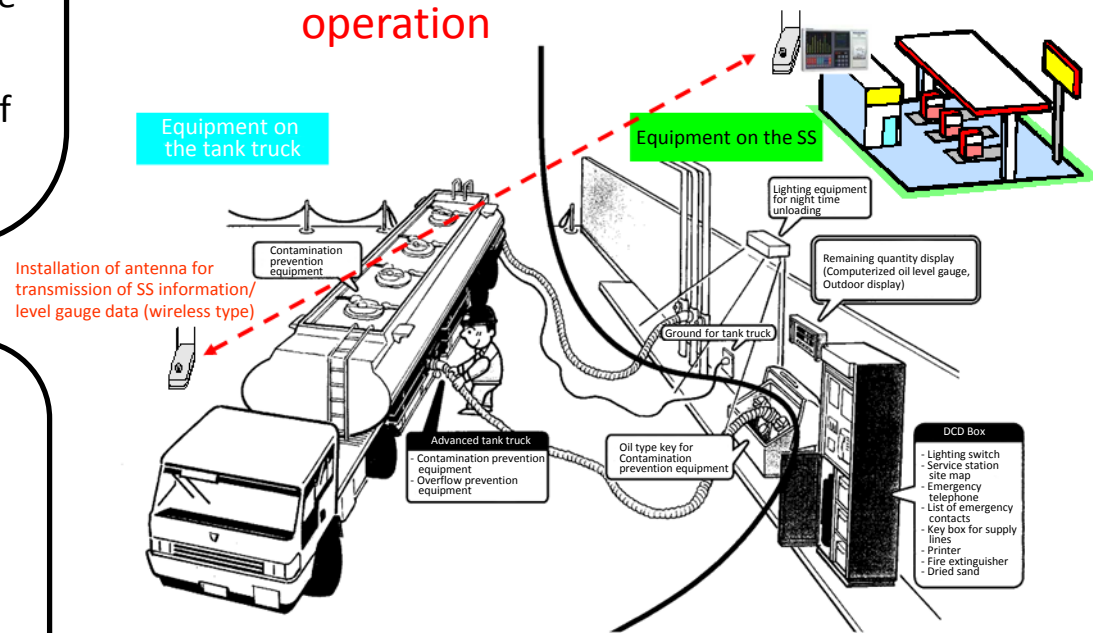


Evaluation of one-man unloading system

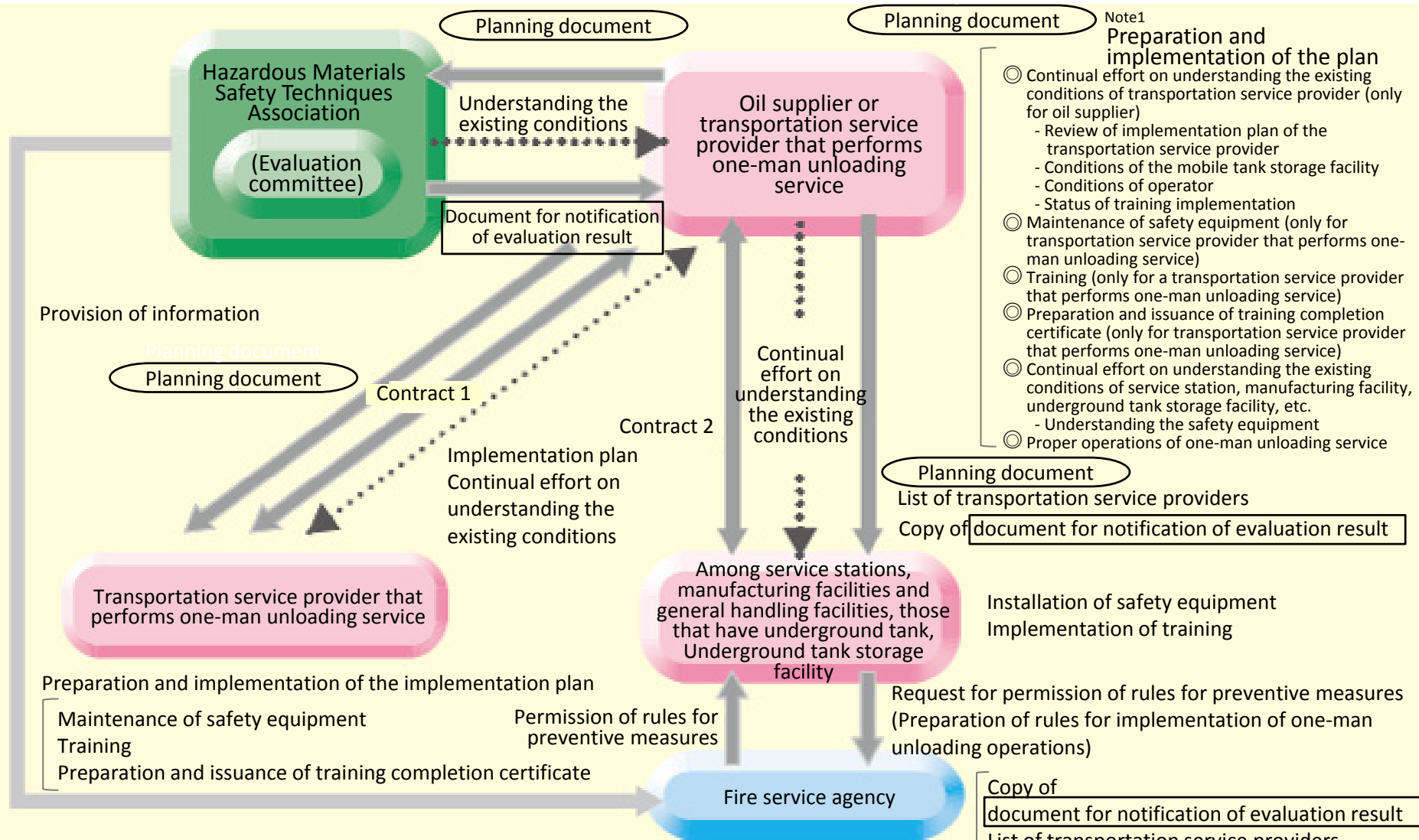
When hazardous material is unloaded from a mobile tank storage facility at a service station or a general handling facility where an underground storage tank is used, the hazardous material engineer assigned at the mobile tank storage facility can perform unloading operations by himself, provided that all required safety measures are satisfied. The required safety measures include but are not limited to installations of safety equipment at the service station and the mobile tank storage facility such as devices for preventing contamination or overflow, etc. that meet the required specifications, as well as completion of the required training for the operator of the mobile tank storage facility, etc.

Based on a request from oil supplier or transportation service provider, this Association provides evaluation services to ensure that the established system satisfies the applicable requirements through consultation with the "Evaluation Committee for One-Man Unloading System," which consists of members with relevant knowledge and experience.

Conceptual drawing of one-man unloading operation



Evaluation Workflow for One-Man Unloading System



Note 1: A document describing the one-man unloading system prepared by the oil supplier, etc.

Note 2: A copy of document that provides evidence of agreement that the oil supplier or the relevant service provider performs one-man unloading services in accordance with the one-man unloading system for the applicable service station, manufacturing facility, underground tank storage facility, etc.

Evaluation for the effectiveness of large capacity foam discharge system

A large capacity foam discharging system consists of multiple different components. When it is composed as one system, it needs to be operated in accordance with the intended performance standards without having any issues, or the application of the large capacity foam discharge system to be employed needs to be suitable for the design of the subject facility of the specified organization. Therefore, the specified organization (including wide-area joint disaster prevention organization) must check the required items to verify that the system meets the above-mentioned elements when a large capacity foam discharge system is applied.

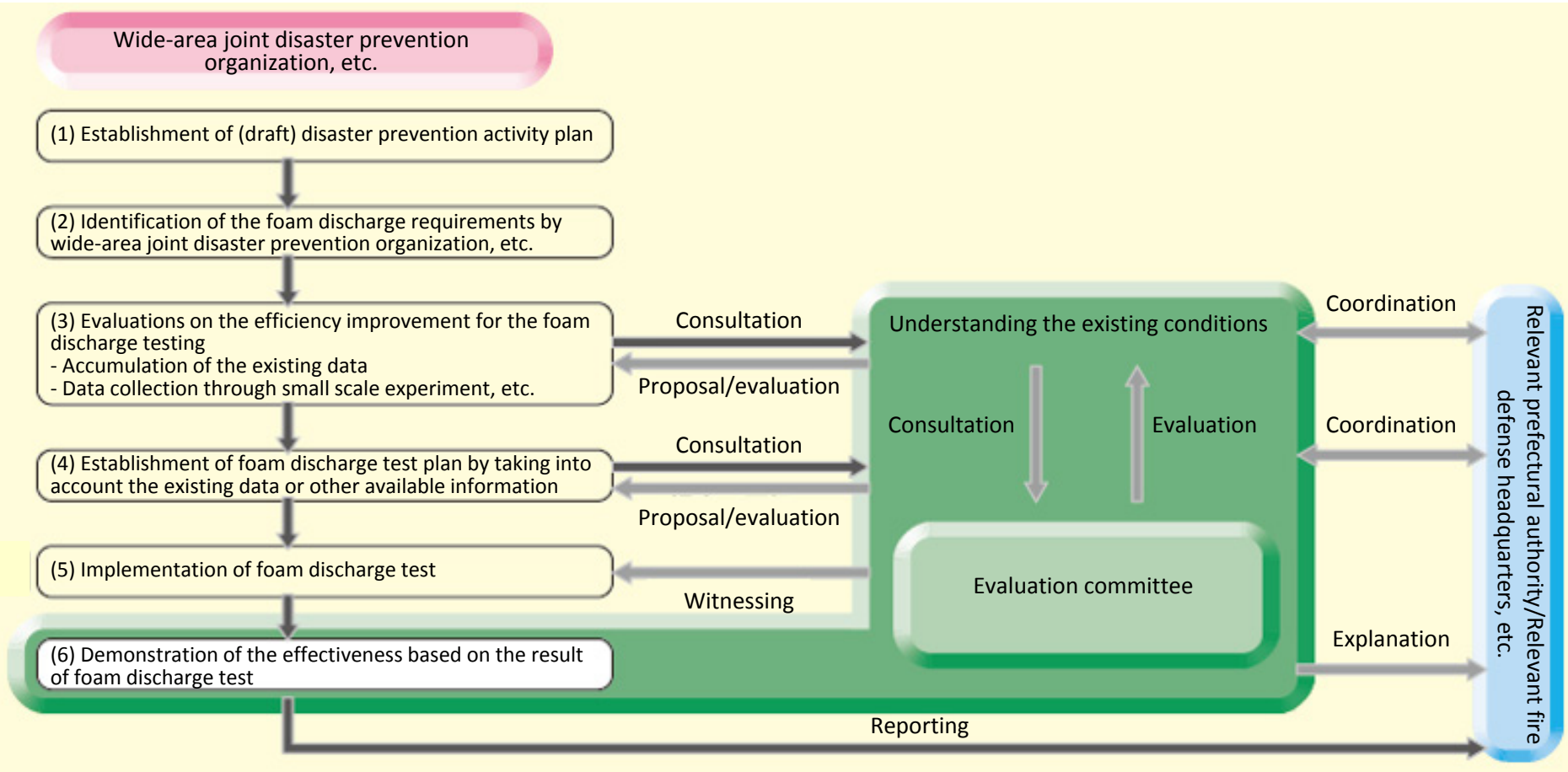


This Association provides comprehensive effectiveness evaluation services according to requests from the specified organizations (including wide-area joint disaster prevention organization) to ensure that the type of fire-extinguishing foam is suitable for the tank fire incident and the using foam gun is properly designed in terms of the discharge angles and discharge distance so as to be sufficient for the possible fire fighting operations considering the characteristics of the foam itself and discharge characteristics of the foam that are evaluated based on the actual usage scenario of the large capacity foam discharging system to be employed.

Foam discharge using a large capacity foam discharge system



Evaluation Workflow for the Effectiveness of Large Capacity Foam Discharge System



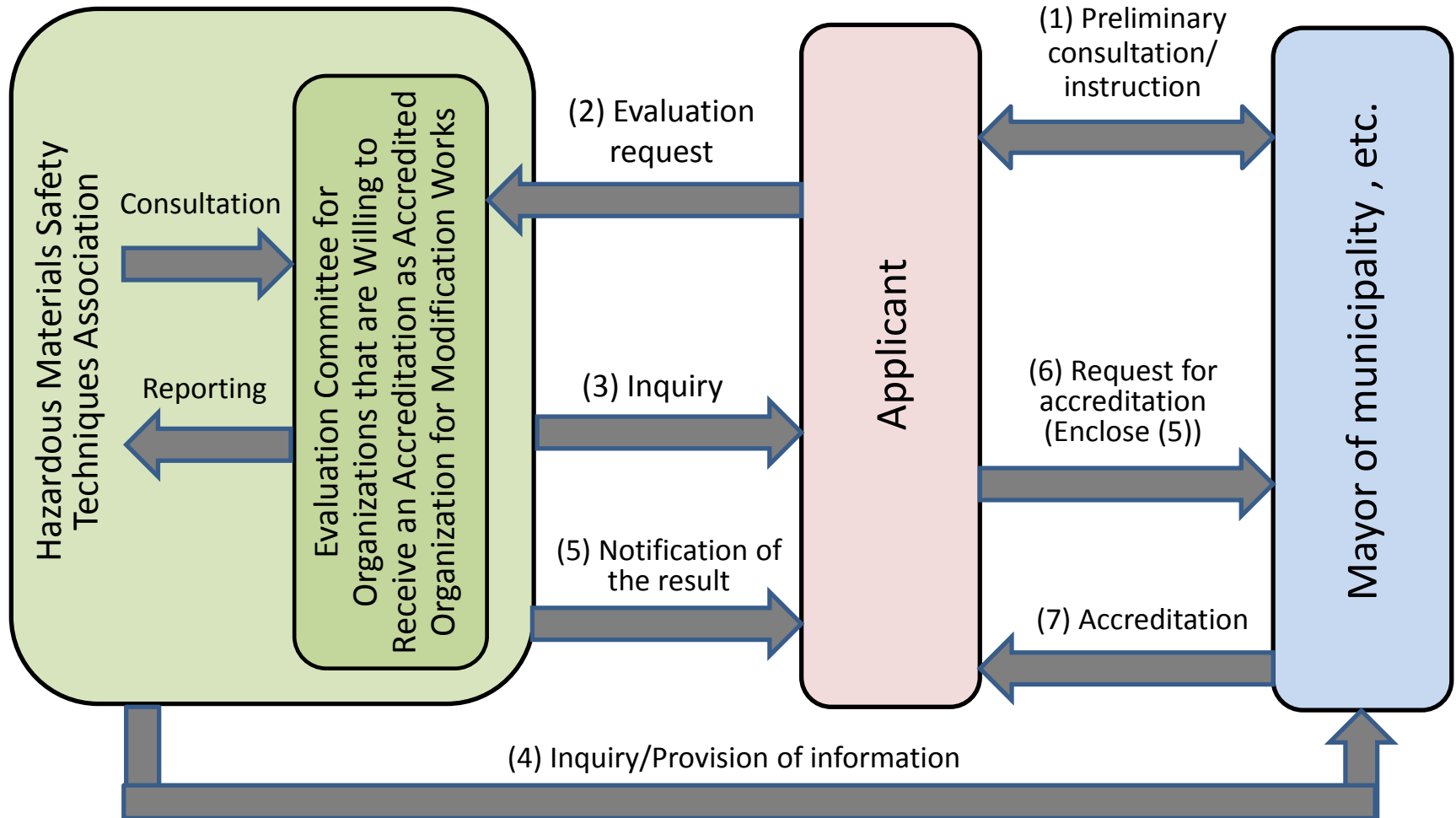
Evaluation for organizations that are willing to receive an accreditation as accredited organization for modification works

With regard to the final inspection and pre-final inspection (final inspection, etc.) for modification work of a hazardous material manufacturing or storage facility that meets certain requirements, for the specified modification work performed by an organization accredited by the mayor of municipality or other relevant authority for their demonstration of excellent safety management structure including construction management (accredited organization), the mayor of municipality or other relevant authority can implement the final inspection, etc. utilizing the result of self-inspection performed by the organization.



Based on a request from an organization who is willing to receive an accreditation, this Association evaluates whether or not the requesting elements meet the assessment criteria for the accreditation through consultation with the “Evaluation Committee for Organizations that are Willing to Receive an Accreditation as Accredited Organization for Modification Works,” which consists of members with relevant knowledge and experience.

Evaluation workflow for organizations that are willing to receive an accreditation as accredited organization for modification works

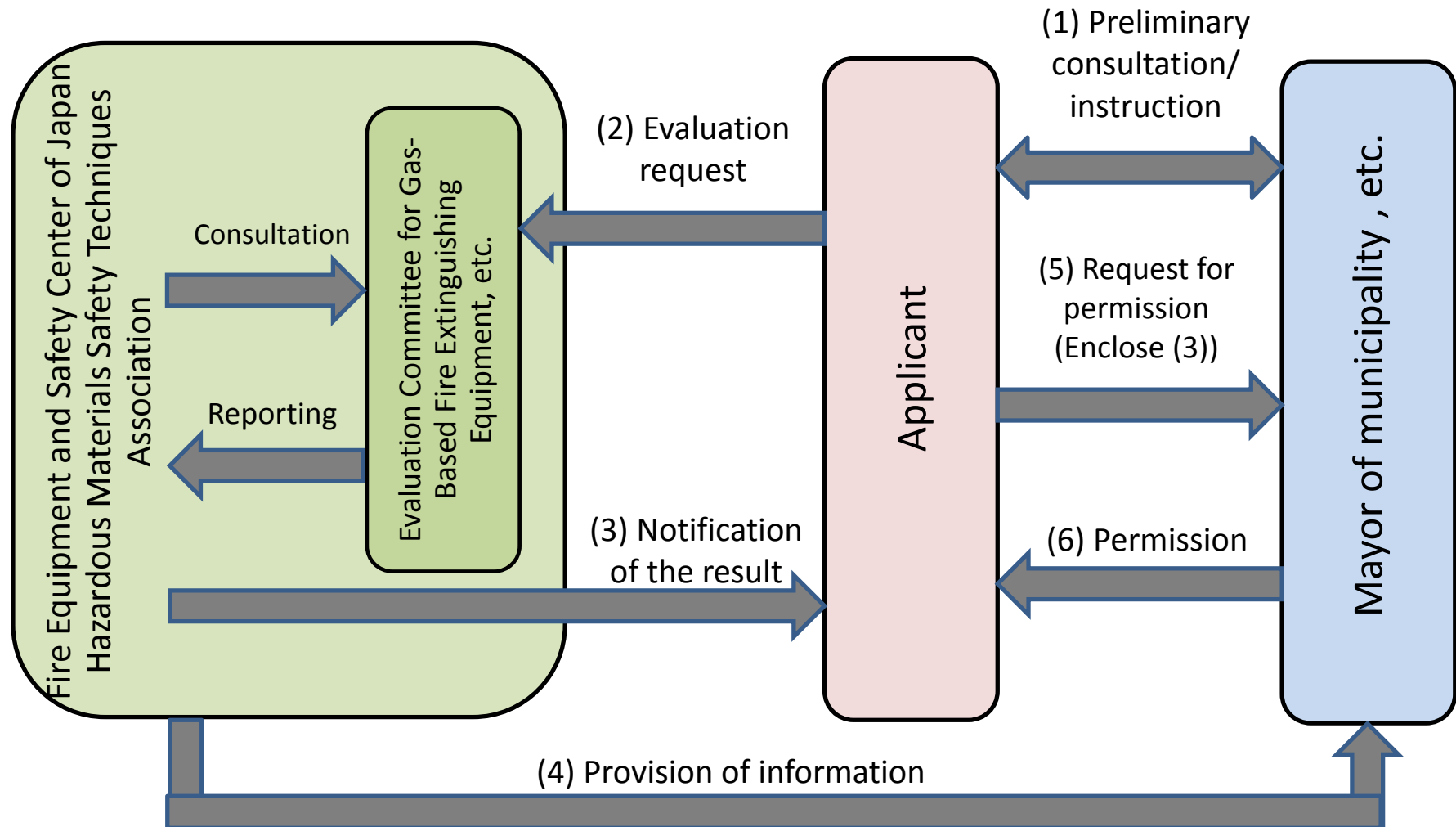


Evaluation of gas-based fire extinguishing equipment, etc.

When installing gas-based fire extinguishing equipment using a halon substitute fire extinguishing agent at a hazardous material facility, this Association, in collaboration with the Fire Equipment and Safety Center of Japan, evaluates the function, performance, and other aspects of the requested gas-based fire extinguishing equipment through consultation with the “Evaluation Committee for Gas-Based Fire Extinguishing Equipment, etc.”, which consists of members with relevant knowledge and experience.



Evaluation workflow for gas-based fire extinguishing equipment, etc.



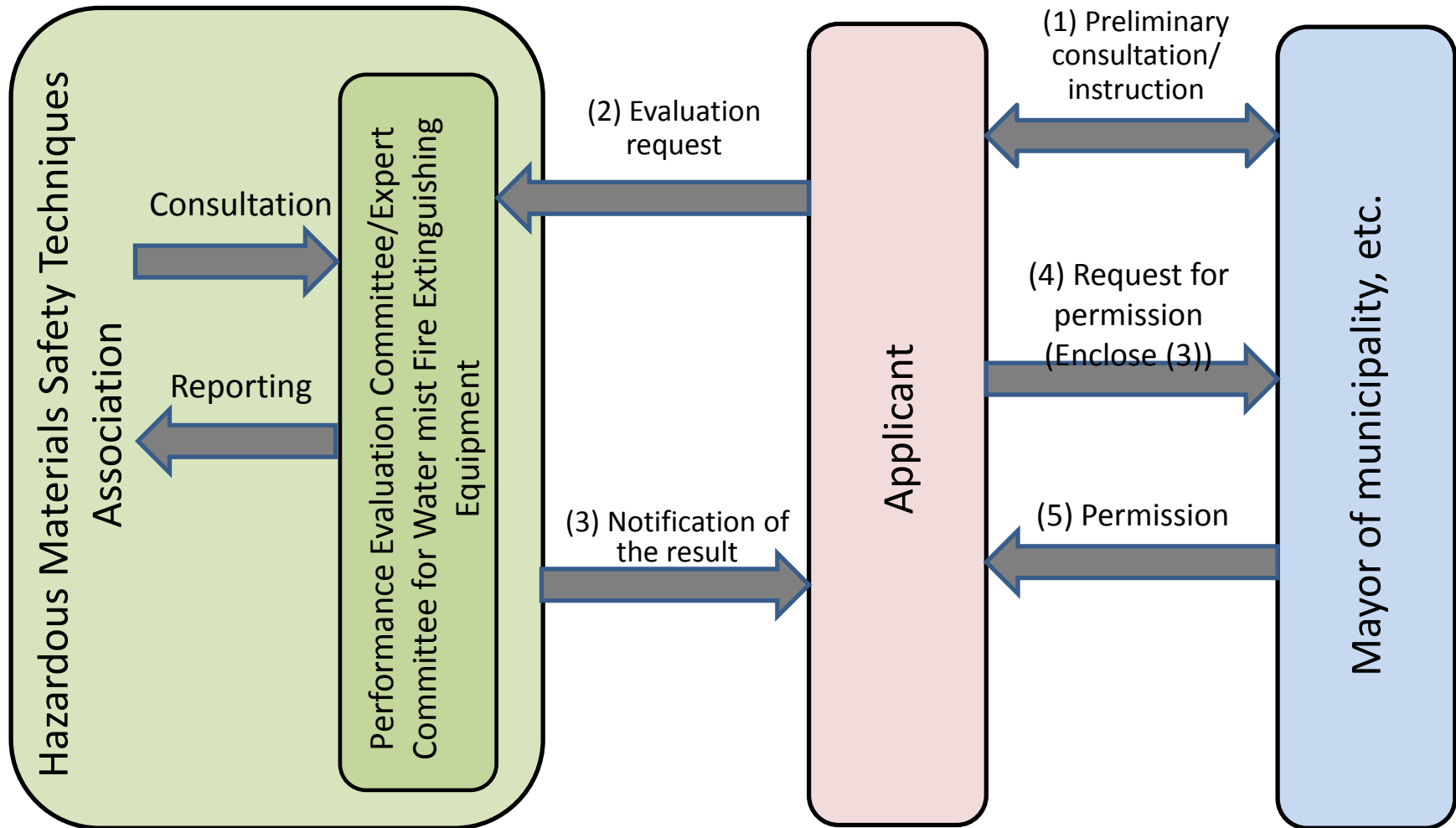
Performance evaluation for water mist fire extinguishing equipment

In recent years, water mist fire extinguishing equipment (fire extinguishing equipment that can tackle fires by spraying mist water) has become widely adopted overseas for engine rooms or cabins of ships or ground facilities. In Japan, research and development for this type of equipment has progressed, the fire extinguishing performance under the condition that meet certain requirements has already been confirmed, and it is almost in the practical use phase.



In response to requests from the manufacturers of water mist fire extinguishing equipment, hazardous material facility construction service providers, and fire service agencies, when water mist fire extinguishing equipment is installed at a hazardous material facility or other areas, this Association performs evaluations to determine the effectiveness of the equipment in terms of its installation, maintenance methods, etc..

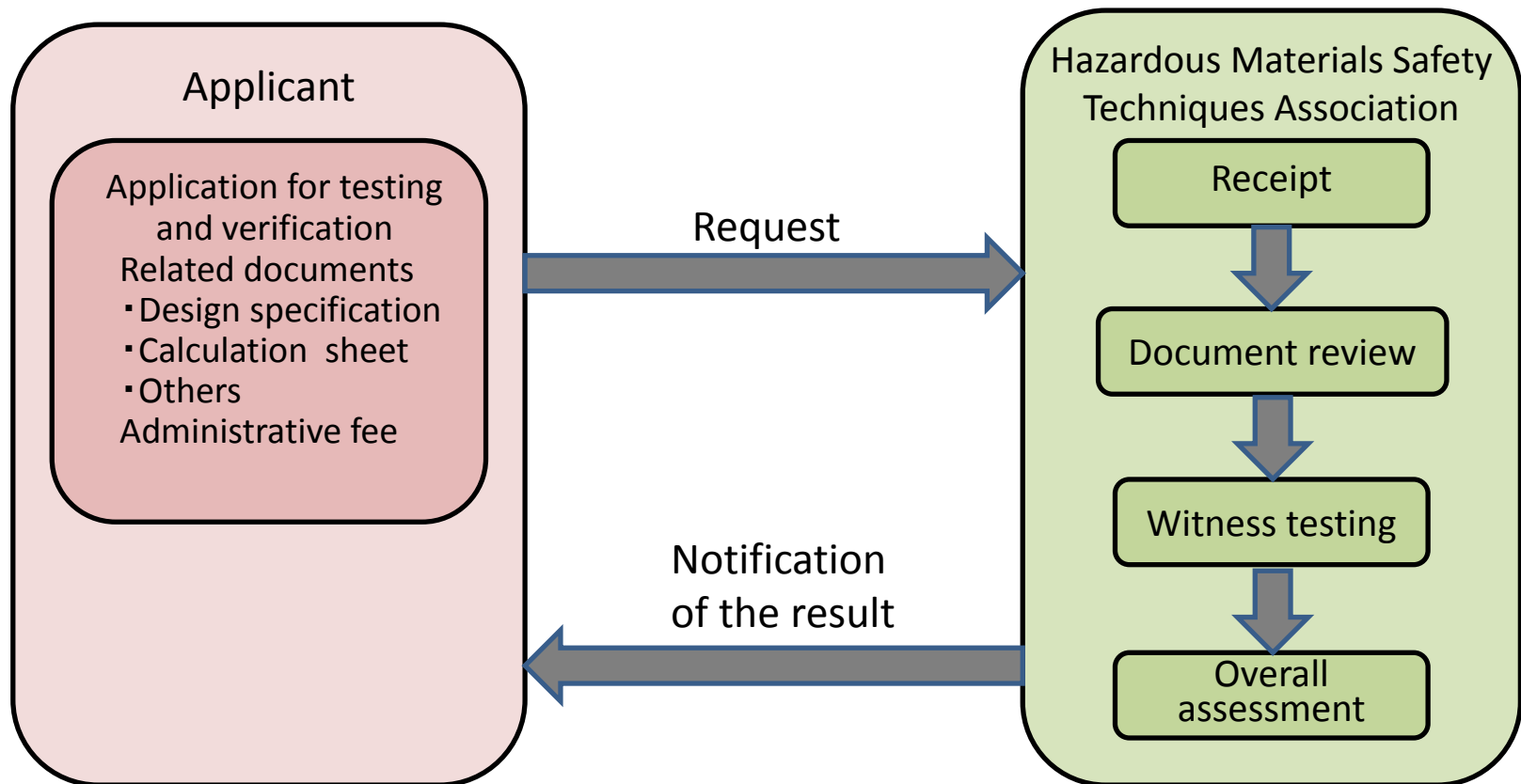
Performance evaluation workflow for water mist fire extinguishing equipment



Testing and Verification

To prevent hazardous material-related disaster, this Association performs testing and verification for multiple areas to determine if hazardous material transportation containers, hazardous material, or other related material handling facility, and equipment design or performances meet the required technical standards.

Testing and verification workflow



Hazardous material transportation container

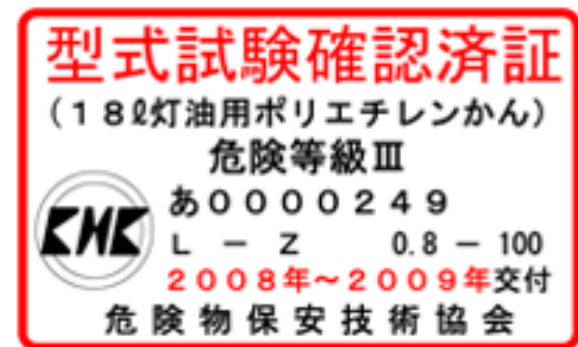
Containers used for transportation of hazardous material

● Polyethylene container for kerosene ●

By performing drop test, airtightness test, internal pressure test, weathering test, material test, etc., verification is conducted to determine if the product conforms to the standards specified by the Fire Service Act and the regulations; and, if conformity is confirmed, a certificate of type test and verification completion is placed on the product.



Polyethylene container for kerosene



Labeling of standard
conformity

Metal drum, etc., 18-liter metal can

By performing drop test, airtightness test, internal pressure test, stacking test, etc., verification is conducted to determine if the product conforms to the standards specified by the Fire Service Act and the regulations; and, if conformity is confirmed, a certificate of test and verification completion is labelled.



Metal drum



Pail



18-liter
metal can

Liquid hazardous
material container



Solid hazardous
material container



Labeling of standard
conformity

● Other hazardous material transportation container ●

By performing drop test, airtightness test, internal pressure test, stacking test, etc., verification is conducted to determine if the product conforms to the standards specified by the Fire Service Act and the regulations; and, if conformity is confirmed, a certificate of test and verification completion is labelled.



Gasoline can



Labeling of standard
conformity

Small quantity hazardous material tank

A tank for storing hazardous material in quantity below the specified quantity

By performing filling water test/hydraulic test, material test, etc., verification is conducted to determine if the product conforms to the standards specified by the municipal fire prevention ordinance; and, if conformity is confirmed, a certificate of test and verification completion is labelled.



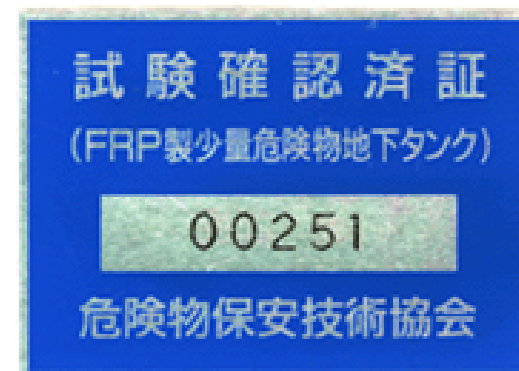
Small quantity hazardous material tank
(Steel, Aboveground type)



Small quantity hazardous material tank
(FRP, Underground type)



Certificate of filling water tank test and verification completion
(Steel, Aboveground type)



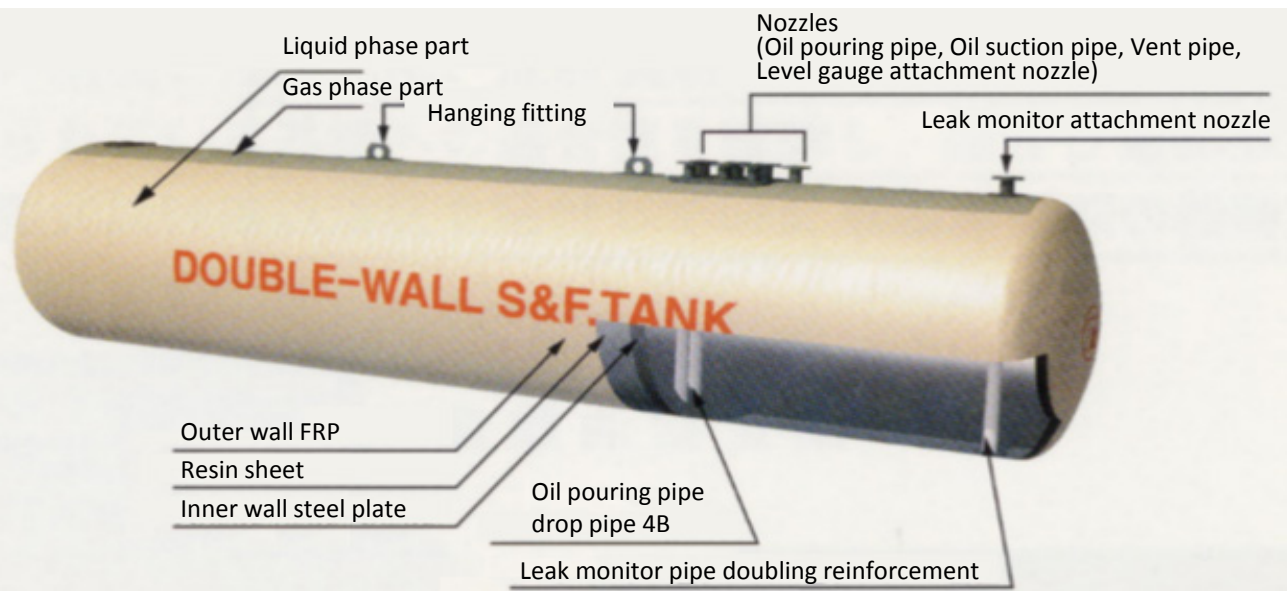
Certificate of filling water tank test and verification completion
(FRP-made small quantity hazardous material underground tank)

Double-wall tank

Underground tank having an outer wall with double-wall structure

Steel-made reinforced plastic-made double-wall tank (SF Double-wall tank)

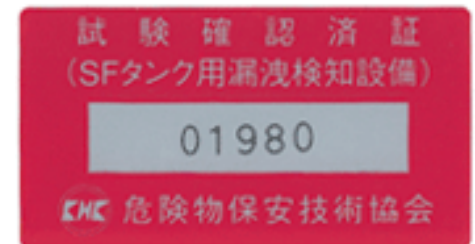
Verification is conducted to determine if the materials, structure, or other features related to the tank body coating and design and other features of spill detection device conform to the standards specified by the Fire Service Act and the regulations; and, if conformity is confirmed, a certificate of test and verification completion is labelled.



SF Double-wall tank



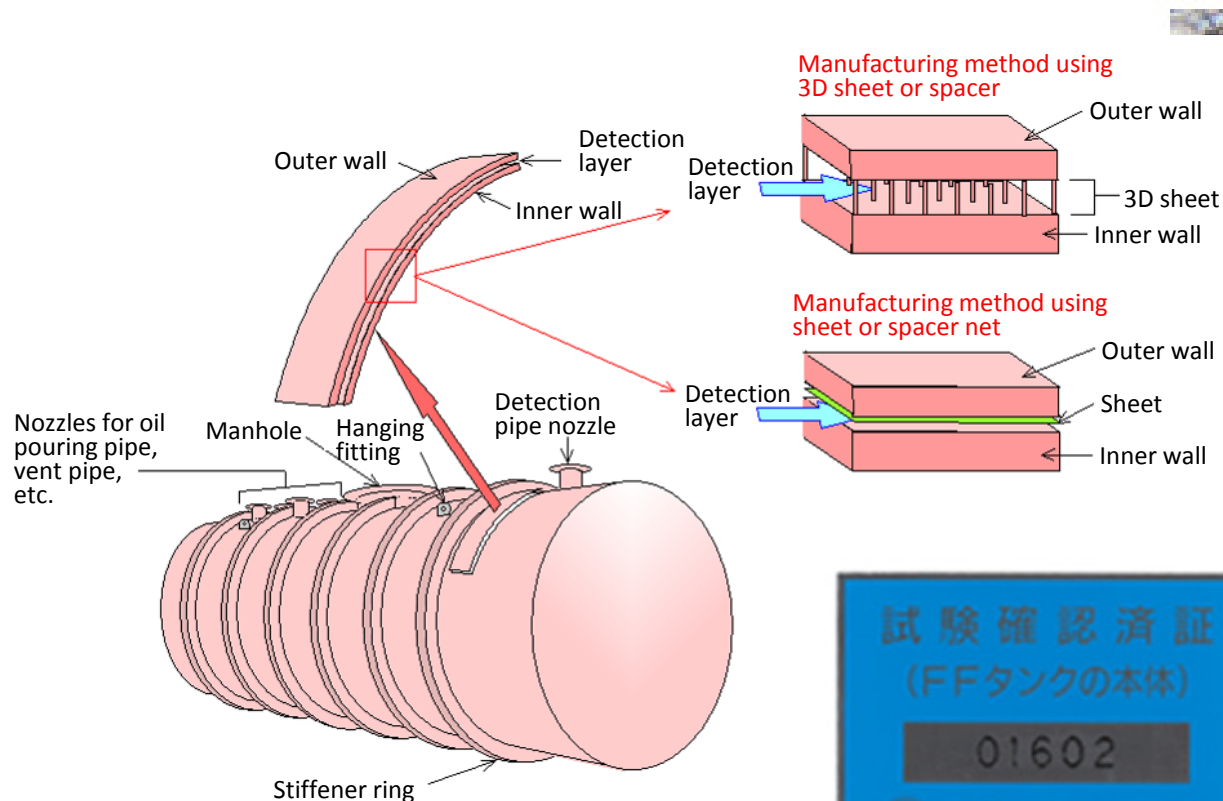
Certificate of test and verification completion (SF tank coating)



Certificate of test and verification completion (SF tank spill detection equipment)

● Reinforced plastic-made double-wall tank (FF Double-wall tank) ●

Verification is conducted to determine if the materials, structure, or other features related to the tank body coating and design and other features of spill detection device conform to the standards specified by the Fire Service Act and the regulations; and, if conformity is confirmed, a certificate of test and verification completion is labelled.



FF Double-wall tank



Certificate of test and verification completion
(FF tank body)



Certificate of test and verification completion
(FF tank spill detection equipment)

Fixed fuel dispenser and fixed oil supply equipment

Fixed equipment that is used for supplying fuel directly to vehicles or refilling kerosene into containers

Verification is conducted to determine if the following elements conform to the standards specified by the Fire Service Act and the regulations; and, if conformity is confirmed, a certificate of type test and verification completion is labelled.

- Design, materials, spillage of pipe and safety fitting
- Design and materials of dispenser/oil supply hose
- Maximum discharge capacity
- Explosion-proof structure of electrical apparatus



Fixed oil supply equipment



Certificate of type test and verification completion



Vapor barrier verification certificate

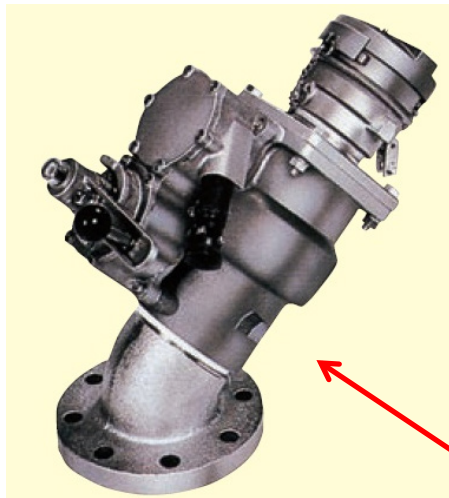


Fixed fuel dispenser

Overflow prevention equipment

Equipment that prevent overflow of hazardous material when hazardous material is unloaded from a mobile tank storage facility to an underground storage tank

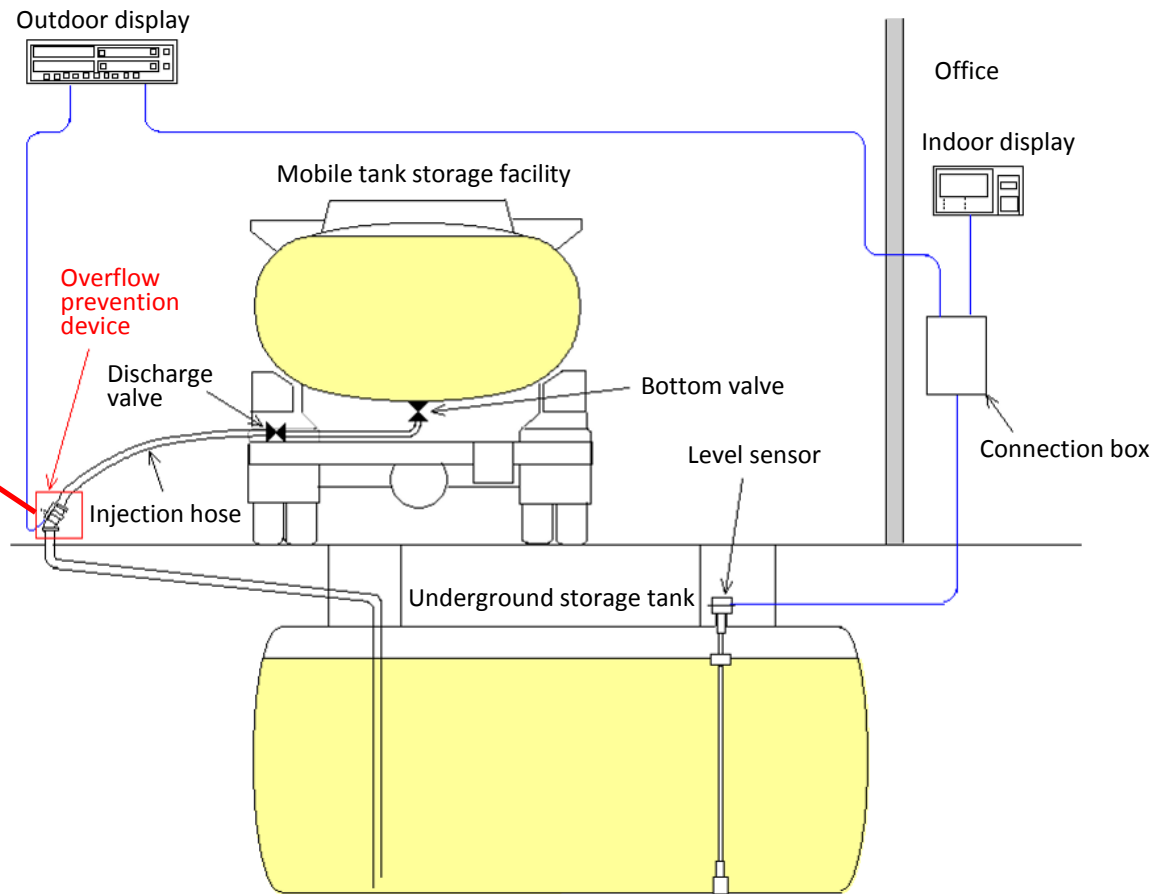
Verification is conducted to determine if the design of overflow prevention equipment, and functions, operability, and other features of the overflow prevention conform to the standards specified by the Fire Service Act and the regulations; and, if conformity is confirmed, a certificate of test and verification completion is labelled.



Overflow prevention device



Certificate of test and verification completion



Packaged fixed foam fire extinguishing equipment used at self-service oil service station

**Equipment that can tackle a fire by discharging fire
extinguishing foam toward a vehicle parked in front of
the fixed fire dispenser or the lower part of the vehicle**

Verification is conducted to determine if the design of packaged fixed foam fire extinguisher equipment, fire extinguishing foam, discharge performance, and fire extinguishing performance conform to the standards specified by the Fire Service Act and the regulations; and, if conformity is confirmed, a certificate of type test and verification completion is labelled.



Packaged fixed foam fire extinguishing equipment

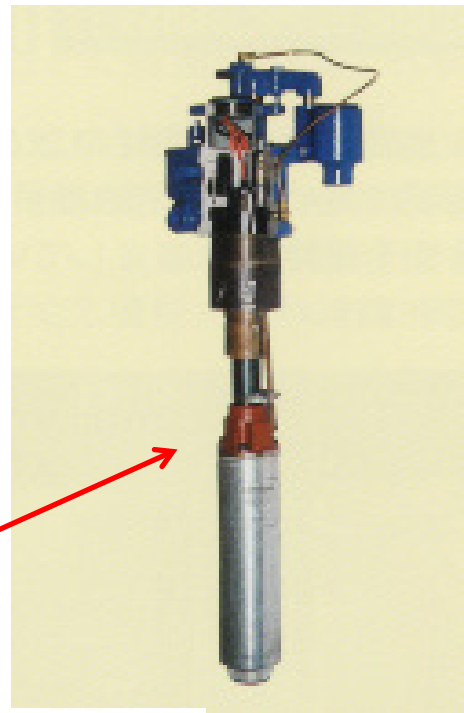
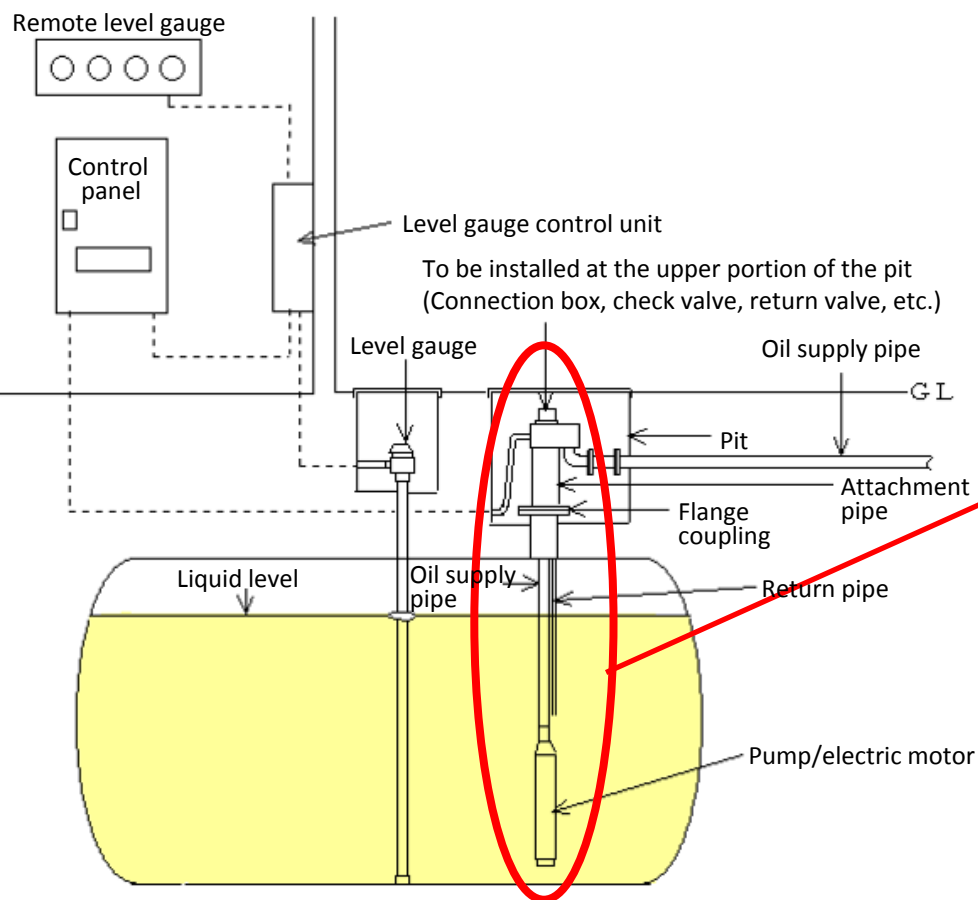


Certificate of type test
and verification
completion

Submerged fuel pump

Pumping equipment for which a pump or an electric motor is installed inside the specially designed tank

Verification is conducted to determine if the automatic stop function, design, materials, and other features of electric motor used at a submerged fuel pump facility conform to the standards specified by the Fire Service Act and the regulations; and, if conformity is confirmed, a certificate of type test and verification completion is labelled.



Certificate of type test and verification completion

Internal coating material for outdoor storage tank

Coating material that prevents corrosion inside the tank

Epoxy resin coating, Glass flake resin, Glass fiber reinforced plastic

Verification is conducted to determine if the coating operability, shock resistance, solvent resistance, and other features of coating material conform to the “Guideline for Coating Applied to Prevent Corrosion Inside the Specific Outdoor Storage Tank”; and, if conformity is confirmed, a certificate of test and verification completion is labelled.



Internal coating product

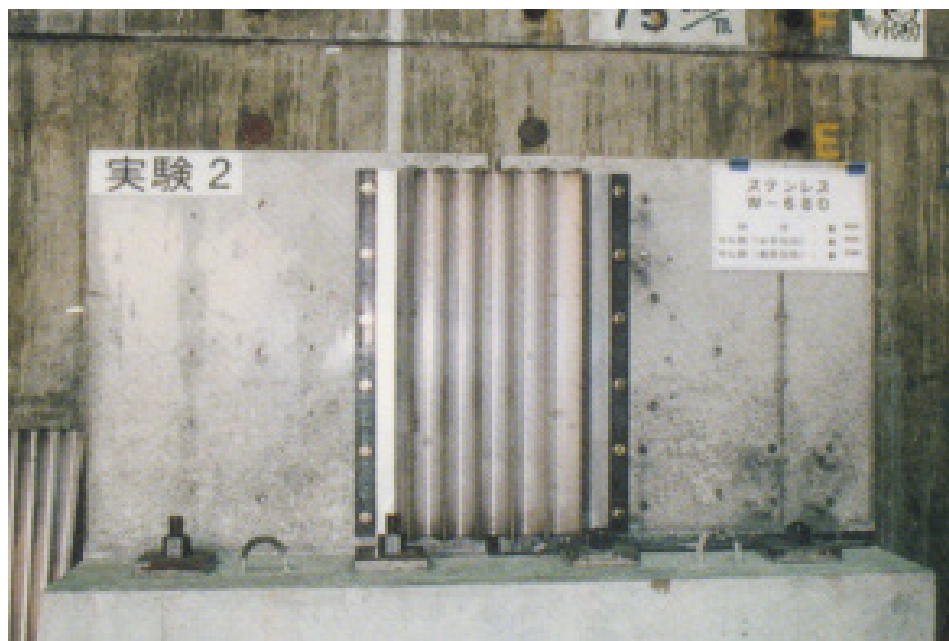


Certificate of test and verification completion

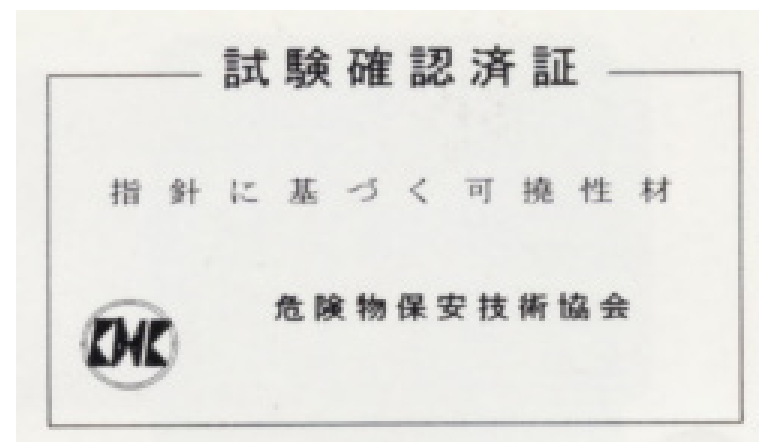
Reinforcing material for joint part of oil containment dike

Material that prevent leak of hazardous material from joint part of oil containment dike

Verification is conducted to determine if the performance or other features of rubber-made flexible members and stainless-made flexible members used as reinforcing material of joint parts of oil containment dike conform to the “Technical Guideline for Reinforcement of Joint Parts of Oil Containment Dike”; and, if conformity is confirmed, a certificate of test and verification completion is labelled.



Reinforcing material for joint part of
oil containment dike

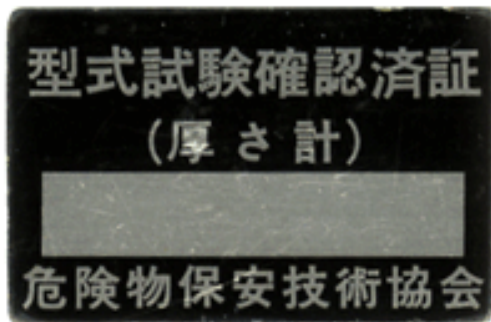


Certificate of test and
verification completion

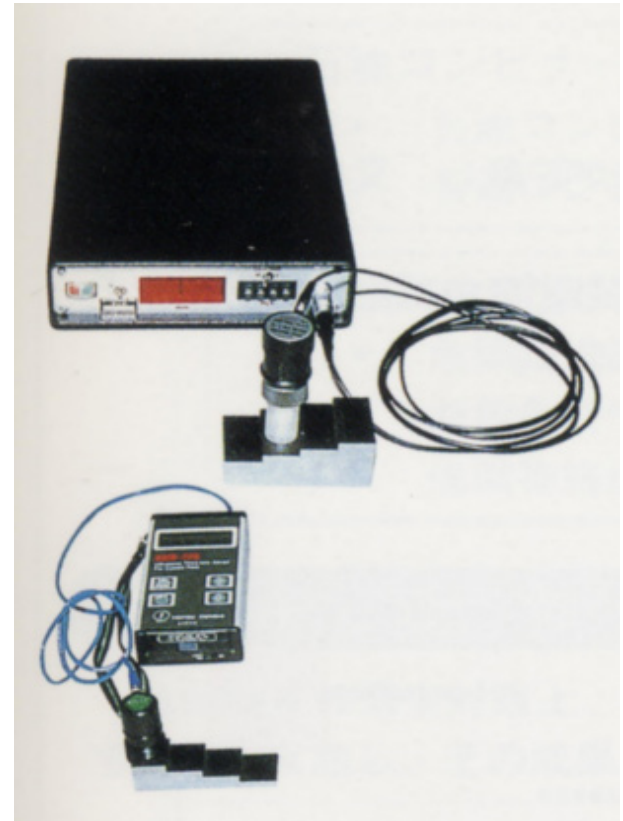
Digital display ultrasonic thickness meter

A meter that allows measurement of wall thickness from the surface of internal coating of the tank

By performing thickness test using a coated sample, measurement accuracy test when corroded parts exist, stability test for temperature/time changes, etc., verification is conducted to determine if the performance conforms to the “Standards for performance test methods for digital display ultrasonic thickness meter that is used for measuring the tank thickness from the coating surface”; and, if conformity is confirmed, a certificate of type test and verification completion is labelled.



Certificate of type test and verification completion

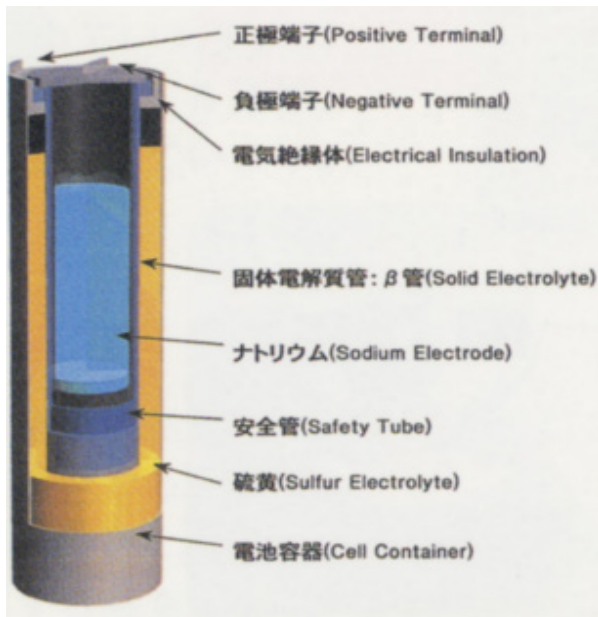


Accuracy test
(Performance is verified by measuring thickness of sample pieces)

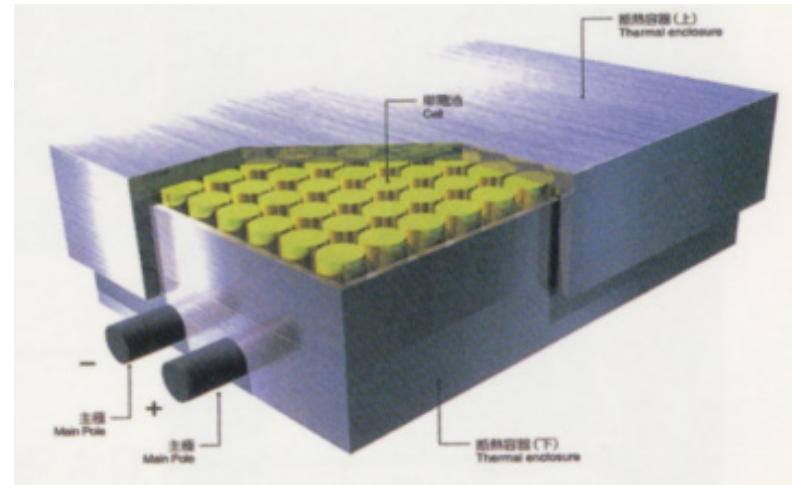
Sodium-sulfur battery

A battery using sodium which serves as the negative electrode, sulfur which serves as the positive electrode, and ceramic solid called β -alumina electrolyte

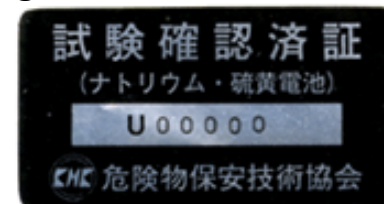
Verification is conducted to determine if the fire safety performances of sodium-sulfur battery conform to the “Technical Standards for Hazardous Material Facility where Sodium-Sulfur Battery is Used”; and, if conformity is confirmed, a certificate of test and verification completion is labelled.



Structure of a single sodium-sulfur battery



Structure of module battery that contains a combination of single sodium-sulfur batteries

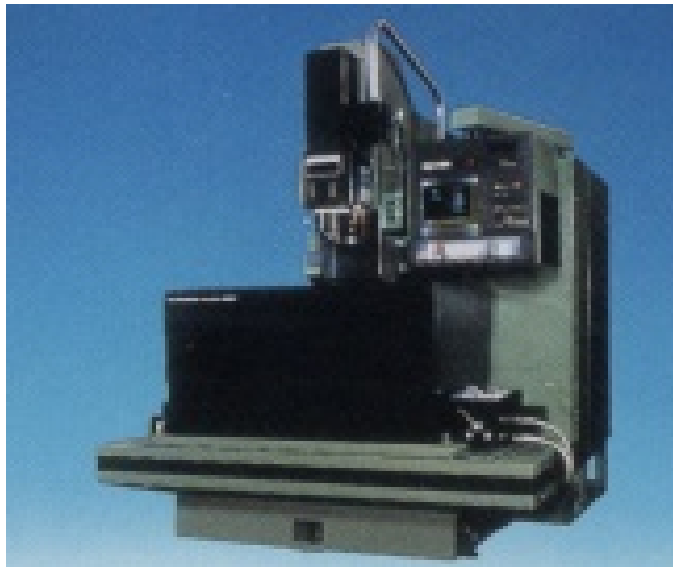


Certificate of test and verification completion

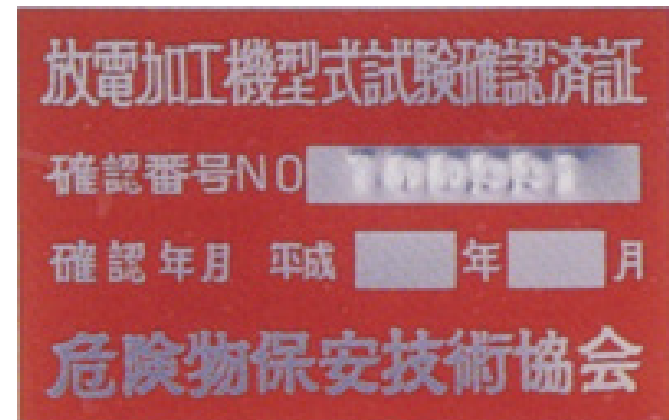
Electric Discharge Machine

A manufacturing equipment that is used for precise mold processing in oil for plastic molding application

By performing filling water test of processing solution tank, function test of safety device, function test of automatic fire extinguishing equipment, and other tests, verification is conducted to determine if an electric discharge machine which uses hazardous material (flash point is 70°C or higher) conforms to the standards specified by the municipal fire prevention ordinance; and, if conformity is confirmed, a certificate of type test and verification completion for electric discharge machine is labelled.



Electric Discharge
Machine



Certificate of type test and
verification completion for electric
discharge machine

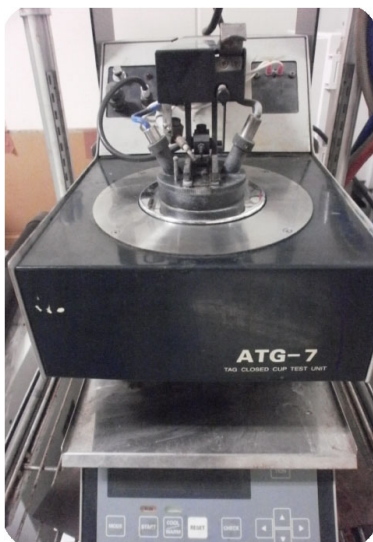
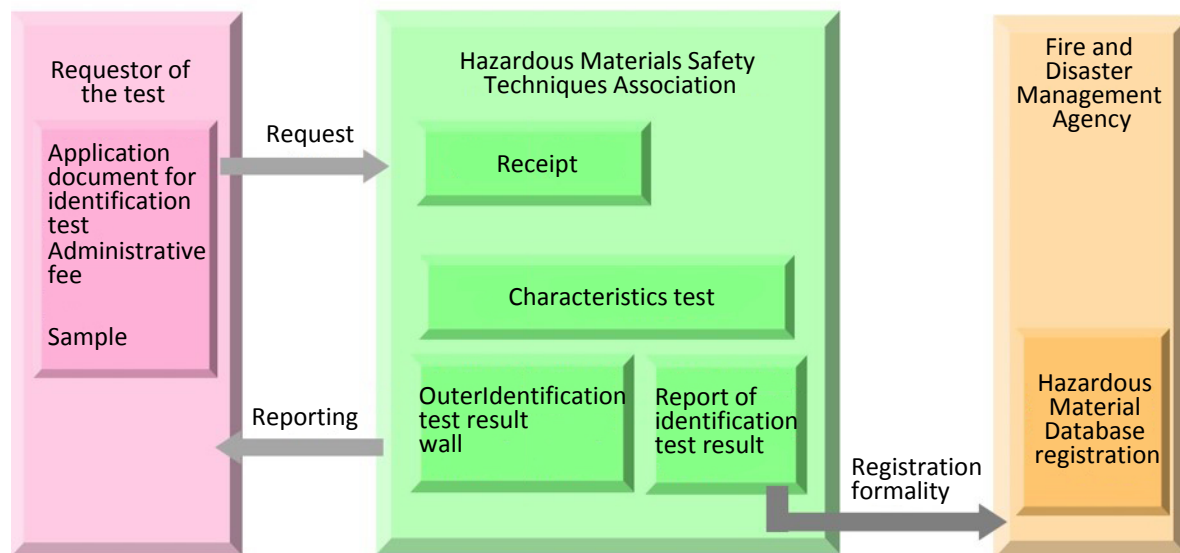
Hazardous material identification and testing/Issuance of registration certificate

This Association performs a characteristics identification test that is used to identify the type, characteristics, and name of the hazardous material or other related material, as well as provides services for issuance of the registration certificate for the hazardous material database.

Hazardous material identification test

In response to a request from an organization, who stores or handles hazardous material, for identification of characteristics of the material concerned, this Association makes judgment on proper testing parameters, performs the characteristics test and reports the result of the testing to the requester. Additionally, based on the test result obtained, registration to the Fire and Disaster Management Agency's hazardous material database can also be performed on behalf of the organization.

Workflow for hazardous material identification test



Tag closed-cup flash point measurement apparatus



Cleveland open-cup flash point measurement apparatus



Seta closed-cup flash point measurement apparatus

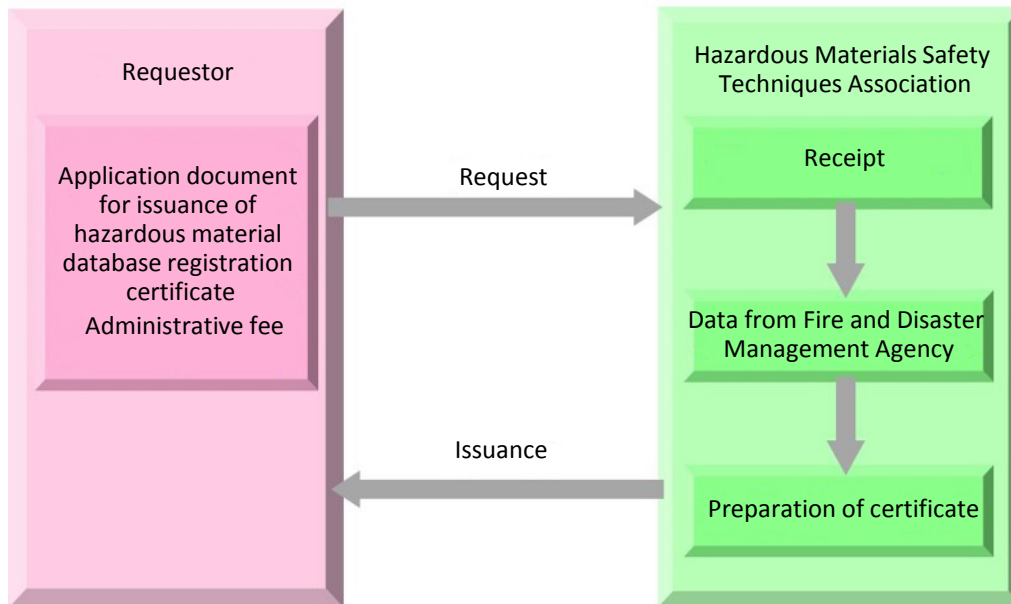
Testing apparatuses used for measuring flash point

Issuance of hazardous material database registration certificate

In order to rationalize and unify the hazardous material identification duties, the Fire and Disaster Management Agency has established the hazardous material database and maintains the database by receiving characteristics test reports for hazardous materials or other related materials that are stored or handled by organizations.

For those registered in the Fire and Disaster Management Agency's hazardous material database, this Association provides services to issue a certificate that proves a material is registered in the database according to a request from organization who is in the registration, etc.

Workflow for issuance of hazardous material database registration certificate



平成 19 年 3 月 1 日

危険物データベース登録確認書

危険物保安技術協会

1 登録番号	4021-9999999		
2 登録物品名	カスミススペシャルRM		
3 登録者名	霞ヶ関石油株式会社		
4 類・品名・性質	第四類 第一石油類 非水溶性液体		
5 状態		6 引火点	-18.0℃

Example of hazardous material database registration certificate

Study and Research

A variety of studies and research are performed in order to contribute to the overall improvement and ensuring the safety of hazardous materials and other related materials. The outcomes of our studies and research are incorporated into the related national laws and regulations or revisions to the technical standards as well as other measures, and used as reference materials for safety instruction of the fire service agencies and as guidelines for safety measures in private organizations.

Our study and research can primarily be classified into those performed based on requests, and self-initiatives.

Requested research

Research is conducted based on requests from public organizations such as the central government, etc. for specific issues required when such organization needs to study the necessary measures, etc.

When conducting studies and research, depending on the purpose or type of each research subject, a committee which is composed of the best members of expertise who have relevant academic and industrial experience and are from related administrative agencies such as the Fire and Disaster Management Agency, etc.; and efforts are made to surely obtain precise and practical outcomes through careful evaluations and professional and demonstrative analysis while adopting multilateral viewpoints by fully utilizing the wide variety of data and specialized knowledge and experiences accumulated in this Association for many years of operations. Additionally, the outcomes are not only reported directly to the requester, but also shared among all concerned parties as necessary.

Recent major research

Hazardous material facility-related

- Study for corrosion on a rear surface of tank bottom using the continuous plate thickness measurement data for old law outdoor tank storage facility
- Statistic analysis for internal corrosion and external corrosion on tank bottom plate of old law outdoor tank storage facility
- Study for verifying the earthquake-proof safety for outdoor tank storage facility

Petroleum complex-related

- Study for update of the disaster prevention manual for self-defensive organization for disaster prevention, etc. and maintenance/performance improvement of the specified disaster prevention facilities, etc.
- Survey for emergency response drill at disaster prevention headquarters of petroleum complex, etc.

Accident prevention measures-related

- Study/analysis for hazardous material accident prevention
- Study and research on supporting methods for disaster prevention measures for private companies

Self-initiative research

For any issues that are believed to be significantly important for safety measures of hazardous materials or other materials, this Association voluntarily conducts studies and research for these self-initiative research subjects, and the outcomes are provided to a wide variety of concerned parties for utilization.

Recent major researches

- Analysis of fire and spill accidents at hazardous material facilities
- Study for application of the pile draft foundation to outside tanks by taking into account the subsidence due to earthquake
- Study on preparation of guideline for inspection of side wall of outdoor storage tank
- Study for effective solutions to protect a large underground storage tank from earthquake and tsunami
- Study for ideal solutions for effective countermeasures against tsunami associated with the revision to the preventive measure rules
- Study for measures to ensure the earthquake-proof safety of outdoor storage tank
- Study for accident prevention during maintenance and inspection of hazardous material facilities

Provision of Technical Information

A variety of promotion activities are performed by providing latest and useful hazardous material-related technical information through issuance of technical information magazine “Safety & Tomorrow,” development of audiovisual educational materials for hazardous material safety measures, website operations, publication of books, provision of accident information, etc.

Issuance of technical information magazine “Safety&Tomorrow”

Major contents

- Trends of hazardous material safety administrations and disaster prevention administrations for petroleum industrial complexes and other petroleum facilities
- Latest technical information for new technologies and new methods for safety measures
- Current operations and challenges in the hazardous material areas in fire service agencies
- Current conditions and challenges under disaster prevention measures at private organizations involved in hazardous materials
- Latest movement in this Association and seminar and workshop plan

Issued 6 times a year



Technical information magazine (Safety & Tomorrow)

Development of audiovisual educational materials for hazardous material safety measures

In order to contribute to the improvement of safety measures for hazardous materials and other related materials, audiovisual educational materials for hazardous material safety measures, which contain easily understandable visual images and commentary, are developed as part of promotions for building awareness on timely hot topics for hazardous material-related organizations or fire service members.

The latest audiovisual educational materials are available on our website.



audiovisual educational materials for hazardous material safety measures

Operation of webpage

Our webpage is available on the Internet. Introduction of our operations and latest technology information are provided through the webpage.
The Internet address is shown below.

<http://www.khk-syoubou.or.jp/>



Home page

Publication of books

The following lists our major books published to date.

- Collection of laws, regulations, notifications, and notices for outdoor tank storage facility
- Interpretation of technical standards for outdoor tank storage facility
- Collection of the law, regulations, and notices for Act on Prevention of Disaster in Petroleum Industrial Complexes and other Petroleum Facilities
- Report of assessment standard deliberation committee for floating roof of outdoor tank storage facility (Fiscal year 2004)
- Record of damages at hazardous material facilities caused by 2003 Tokachi-Oki Earthquake (Fiscal year 2004)



Recently published books

Hazardous material integrated information system

Information shared through the hazardous material integrated information system are as follows.

Hazardous material integrated information system

Accident records	"Accident cases at hazardous material facilities"
Accident analysis	"Accident case search" ● Retrieving accident cases at hazardous material facilities "Accident analysis records" ● Accident analysis conducted by this Association
Accident statistics	"Summary of hazardous material related accidents" (latest year) ● Number of accidents, fatalities, financial loss, etc. "Statistic data for hazardous material facilities, etc." (Latest year) ● Number of hazardous material facilities, Trend for each hazardous material facility category, etc.
Laws and regulations hierarchy link system	"Fire Service Act and its regulations hierarchy link system" "Act on Prevention of Disaster in Petroleum Industrial Complexes and other Petroleum Facilities and its regulations hierarchy link system" ● User friendly data retrieving functions which display the laws, cabinet orders, ministerial ordinances, and notices are linked interactively ● Unknown terms can be searched while reading the article ● Hazardous material-related notifications and administrative enforcement examples are posted
Glossary	"Terms used in the hazardous material-related fire service act and regulations" "Terms used in the Act on Prevention of Disaster in Petroleum Industrial Complexes and other Petroleum Facilities" "Tank-related terms" ● Search function to find meanings
Educational materials	"Educational materials including textbooks and presentation slides that were used during seminars provided by this Association"

☆ Please register for use of this system

For more details, please visit our webpage at (<http://www.khk-syoubou.or.jp/hazardinfo/guide.html>)
Download version of the registration application form is also available.

Hosting seminars and workshops

In order to contribute to the improvement of safety measures for hazardous materials or other related materials, seminars and workshops are hosted for a wide variety of themes including the latest trends of hazardous material safety administrations/disaster prevention administrations for petroleum industrial complexes and other petroleum facilities, new technology/new method utilization measures, past incidents and their countermeasures, development of working-level employees in specialized technical areas, business promotion policy, etc. in addition to the basic techniques for safety measures for hazardous materials or other related materials.

Hazardous material safety techniques course

This course is provided twice a year (Tokyo and Osaka) for those whose primary duties are hazardous material regulatory duties at the prefectural and fire headquarters level. The course covers timely and the latest information, including but not limited to present challenges and trends of hazardous material safety administrations and disaster prevention administrations for petroleum industrial complexes and other petroleum facilities, technical issues related to hazardous material facilities with special emphasis on outdoor storage tanks, topics related to safety measures, and concepts of safety briefed by academic experts. This is two-day course for each session.



Disaster prevention manager/Vice disaster prevention manager workshop

In order to enhance/strengthen the disaster prevention structure of the specified organizations, the organizations are obliged to make efforts on providing educational opportunities that contribute to the improvement of disaster prevention related capabilities for disaster prevention manager/vice disaster prevention manager. This workshop is designed for the managers to improve the emergency management capabilities as top management of an organization. During the workshop, emphasis is given to the evaluation and verification activities, and prediction type desk top simulation training is conducted. Additionally, an advanced refresher workshop is provided for those who completed this workshop, for the purpose of acquiring more practical abilities. This advanced workshop covers action-based desk top training, emergency press conference, and disaster control headquarters operations.



Basic hazardous material workshop

This course is provided twice a year (Tokyo and Osaka) for those who have less than 3 years of hazardous material handling duties for the purpose of developing the attendees to ensure fire/spill accident prevention and compliance with statutory and regulatory requirements. The workshop is instructed by experts who have relevant knowledge on both fire service-related regulatory aspects and practical work aspects, and simple interpretations and easily understandable instructions are provided by the instructors pertaining to the Fire Service Act; characteristics of hazardous materials; locational, structural, and equipment standards for manufacturing or other related facilities; the Act on Prevention of Disaster in Petroleum Industrial Complexes and other Petroleum Facilities; and hazardous material accidents.



Comprehensive educational training for hazardous material facilities

Due to the generation changeover and reduction of large scale hazardous material disasters, the number of firefighting personnel, disaster prevention personnel and self defense fire service members who have experienced hazardous material facility fires have been decreasing. In the meantime, opportunities for conducting large scale emergency drills for hazardous material or gas fire have also been limited due to a variety of restrictions. Such circumstances create considerations among many areas about the possibility of difficulty in handling hazardous material facility fire.

Accordingly, this Association provides a training opportunity once a year (Tokyo and Yokosuka) for two-days course for the purpose of personnel, who will perform activities on the front line in case of hazardous material disaster, to acquire knowledge about hazardous materials and experience radiant heat.



Oil storage tank fire fighting drill

On-site training

Training is provided by sending instructors to your site for private organizations or joint disaster prevention organization, etc. by incorporating the unique operations performed by the organization or educational policy. Types of training include disaster manager workshop, vice disaster manager workshop, and basic hazardous material training that are provided by this Association.



Desktop training



Disaster prevention map

Hazardous material accident seminar

To prevent accidents at hazardous material and other related facilities, it has been said extremely effective to improve the safety measures of the facilities if lessons learned from past incidents are properly utilized. However, it is believed to be true that fire service personnel or safety personnel at hazardous material facilities do not have many opportunities to obtain specific past incident information.

This seminar is provided twice a year (Tokyo and Osaka) and covers past hazardous material accidents that have occurred in Japan by inviting people who were involved in fire fighting activities or causal investigations as lecturers to discuss the factors that caused the incidents, issues, recurrence prevention measures, etc.



Hazardous material accident prevention seminar

This seminar is provided six times a year throughout Japan (Hokkaido/Tohoku area, Kanto/Koshinetsu area, Chubu area, Kinki area, Chugoku/Shikoku area, Kyushu area) for the purpose of promoting dissemination of technical information concerning hazardous material related accident prevention at the same time of the “Hazardous material accident prevention block meeting,” which is held as part of the “Hazardous Material Accident Prevention Basic Policy/Action Plan” that is implemented by the Fire and Disaster Management Agency.



Outdoor tank working level training

In 1977, the Fire Service Act was amended, and significant improvement was made to the standards for the specific outdoor tank storage facilities and open inspections were made obligatory. In the 35 years since the amendment, many accidents, including fires, explosions, and spills occurred caused by earthquakes or corrosion of the facilities, and the standards and safety measures have been revised many times.

In order to ensure safety, it is believed that succession of knowledge and experience pertaining to proper understanding on the related standards, retention and utilization of past repair history, use of proper inspection methods, and repair methods are significantly important challenges that must be overcome.

This training is provided four times a year (Sapporo, Tokyo, Osaka, and Kitakyushu) focusing mainly on the technical standards, permission system, operations/management and inspections, and considerations during design work, etc. that are governed by the Fire Service Act and its associated regulations.



Training for measurement of bottom plate thickness from the coating surface

This training is provided twice a year (Tokyo and Osaka) for the purpose of acquiring and improving the knowledge/skills required for conducting measurements of continuous plate thickness for the tank bottom from the coating surface utilizing new techniques with special emphasis on the outlines of outdoor tank storage facilities, types of internal and external corrosion on the tank bottom, proper processing necessary for measuring continuous plate thickness from the coating surface, interpretation of data, etc.



Classroom session

Initial training is available for people who never attended this training before, and refresher training is also available for those who have attended the initial training five years ago.

Training course for outdoor storage tank coating management engineers

This training is provided twice a year (Tokyo and Osaka) for the purpose of optimization of coating work management, as well as improving, promoting, and acquiring knowledge required for coating work that is needed to prevent corrosion inside the specific outdoor storage tanks.



Initial training is available for people who have never attended this training before, and refresher training is also available for those who attended the initial training five or more years ago.

Training for unified inspection for foam fire extinguishing equipment of outdoor tank storage facilities

With regard to the periodical inspection of outdoor tank storage facility equipped with the Class 3 fixed type foam fire extinguishing equipment, a unified inspection by checking the proper discharge of fire extinguishing foam using aqueous foam solution or water has been required since April 2006 in addition to the conventional inspection items.

This training is designed for those who perform unified inspections for foam fire extinguishing equipment of outdoor tank storage facilities as well as those who perform initial fire fighting activities using foam fire extinguishing equipment in case of fire, and is provided for the purpose of acquiring knowledge and skills pertaining to the foam discharge mechanisms, as well as checking of the characteristics and performance of fire extinguishing foams.



Classroom session