# ADVISORY CIRCULAR AC 18-002

### GUIDANCE FOR DEVELOPMENT OF DANGEROUS GOODS MANUALS

#### SECTION 1 GENERAL

#### 1.1 PURPOSE

This Advisory Circular (AC) provides specific guidance to organizations preparing their dangerous goods manuals for submission to the GCAA during certification for transport of dangerous goods by air.

#### 1.2 STATUS OF THIS ADVISORY CIRCULAR

This is an original issuance of this AC.

#### 1.3 BACKGROUND

- A. ICAO Standards in Annex 18, Safe Transportation of Dangerous Goods by Air, require that Ghana must complete an assessment of an individual, organization or entity before issuing an authorization allowing these entities to engage in the process of transportation of dangerous goods by air.
- B. In support of its international safety oversight obligations, Ghana has safety legislation and guidance regarding the requirements that apply to the safe transportation of dangerous goods, including—
  - 1) GCADs Part 18 and
  - 2) Dangerous goods advisory circulars
- C. Ghana has established a certification process to ensure the completeness and standardization for the issuance of authorizations to transport dangerous goods by air.

#### 1.4 APPLICABILITY

- A. All organizations involved in the transport of dangerous goods by air are required to have an approved policy/procedures manual, or portions of manuals, to enable their personnel to safety accept, handle and transport these goods in accordance with ICAO Technical Inspections.
- B. All individuals involved in the process of transport of dangerous goods by air are required to have access to and use the approved guidance in the performance of their tasks.
- Advisory Circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of
  complying with the directives, or to explain certain regulatory requirements by providing informative, interpretative and
  explanatory material.
- Where a directive contains the words "prescribed by the Authority," the AC may consider to "prescribe" a viable method of
  compliance, but status of that "prescription" is always "guidance" (never a directive).

#### 1.5 RELATED DIRECTIVES

The following directives are directly applicable to the guidance contained in this advisory circular—

GCADs Part 18, Carriage of Dangerous Goods by Air

#### 1.6 RELATED PUBLICATIONS

For further information on this topic, individuals, organizations and other entities are invited to consult the following publications—

- 1) Ghana Civil Aviation Authority (GCAA)
  - ♦ AC 18-001, Process & Application: Transportation of Dangerous Goodsby Air.

Copies may be obtained from the GCAA Safety Directives Department.

- ♦ AC 18-003, Guidance for Development of Dangerous Goods Training Programs.
- 2) International Air Transport Association (IATA)
  - Dangerous Goods Directives
- International Civil Aviation Organization (ICAO)
  - Annex 18, Safe Transportation of Dangerous Goods by Air
  - ◆ Technical Instructions (TI)

Copies may be obtained from Document Sales Unit, ICAO, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

#### 1.7 DEFINITIONS & ACRONYMS

#### 1.7.1 **DEFINITIONS**

- A. The following definitions are used in this advisory circular—
  - Dangerous goods. Articles or substances which are capable of posing a risk to health, safety, property or the environment when transported by air and which are classified according to the International Civil Aviation Organization Technical Instructions for the Safe Transport of Dangerous Goods by Air.
  - Dangerous goods accident. An occurrence associated with and related to the transport of dangerous goods by air which results in fatal or serious injury to a person or major property damage.
  - 3) Dangerous goods incident. An occurrence, other than a dangerous goods accident, associated with and related to the transport of dangerous goods by air, not necessarily occurring on board an aircraft, which results in injury to a person, property damage, fire, breakage, spillage, leakage of fluid or radiation or other evidence that the integrity of the packaging has not been maintained. Any occurrence relating to the transport of dangerous goods which seriously jeopardizes the aircraft or its occupants is also deemed to constitute a dangerous goods incident.
  - 1) **Hazardous chemical** Any chemical which has properties that present either physical or health hazards. Hazardous chemicals include both physical and health hazards.
  - 2) **Hazardous materials** A substance or material which is capable of posing an unreasonable risk to health, safety and property when transported. (See also the definition of "dangerous goods.") There are nine international assigned classes of dangerous goods, which are discussed in Chapter 13.

- 3) Hazardous Occurrence: accident or other occurrence arising in the course of or in connection with the employee's work that has caused or is likely to cause injury tothat employee or to any other person
- 4) **Hazardous waste** A discarded substance that because of its quantity, concentration, physical, chemical or infectious characteristics may cause or contribute to a serious illness or pose a substantial or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of.

#### 1.7.2 ACRONYMS

The following acronyms are used in this manual—

- 1) AOC Air Operator Certificate
- 2) COMAT Company Materials
- 3) DG Dangerous Goods
- 4) DGC Dangerous Goods Coordinator
- 5) **DGR** IATA Dangerous Goods Directives
- 6) IAEA International Atomic Energy Agency.
- 7) IATA International Air Transport Association
- 8) ICAO International Civil Aviation Organization
- 9) **ICAO-TI's** International Civil Aviation Organization Technical Instruction for the Safe Transport of Dangerous Goods by Air.
- 10) NOTOC Notification to the Captain

#### 1.8 GENERAL MANUAL REQUIREMENTS

- A. The operator's Dangerous Goods Manual must detail the proper procedures for dealing with the carriage of dangerous goods on board the operator's aircraft.
- B. The nature of the operation and the operator's policy on what classes or quantities of dangerous goods will be accepted for carriage will dictate the type of information and/or the level of detail that needs to be published for the information of employees.

#### Section 2 Operators Who Do Not Transport Dangerous Goods

Operators who do not accept, handle, or store dangerous goods must provide procedures and instructions in the operator's manual as follows—

 Procedures and instructions so that all personnel responsible for accepting and handling any cargo or packaged materials receive adequate training on the recognition of items classified as dangerous goods;

Adequate, as used here, is defined in an operational sense to mean the demonstrated ability of required personnel to identify such items.

- Procedures and instructions to ensure that no packages are accepted by the operator containing a dangerous good;
- 3) Procedures and instructions for reporting that damaged packages found to contain, or that are suspected of containing, dangerous goods or dangerous goods are reported in compliance with Part 18:

- 4) Procedures and instructions to see that all company material (COMAT) containing dangerous goods will be offered to a different mode of transportation (e.g., ground) and/ or an operator that is authorized to transport dangerous goods; and
- 5) Procedures and instructions to see that any employee, agent, or contract employee of the operator who prepares and/or offers COMAT containing dangerous goods for shipment via any mode is fully trained as a dangerous goods shipper.

#### Section 3 Operators Who Accept Dangerous Goods for Transport

Operators who transport dangerous goods must complete a dangerous goods certification process that includes the submission of an acceptable manual containing the policies and procedures included in this Section.

#### 3.1 REFERENCE TO REQUIREMENTS

The manual must contain references to the regulatory requirements, to include—

- 1) A listing and explanation of the applicable Ghana legislation covering consignment and carriage of dangerous goods
- 2) A listing and explanation of the applicable technical documents relating to dangerous goods matters and their location
- 3) An policy statement emphasizing the need to comply with the company policy and procedures detailed in the manual.

#### 3.2 RESPONSIBILITIES OF COMPANY PERSONNEL

The company dangerous goods manual shall be specific regarding the responsibilities of their personnel—

- 1) For keeping the dangerous goods manual amended and up to date
- 2) For acquiring and distributing reference materials and documentation (e.g., IATA DGRs, checklists etc)
- 3) For ensuring that employees maintain currency in DG training and that records are up to date
- 4) For ensuring that agents and other deemed employees are trained, maintain currency in training and that records are up to date.

#### 3.3 COMPANY POLICY FOR SPECIFIC DG THAT MAY BE TRANSPORTED

The company dangerous goods manual shall be specific regarding the—

- 1) Dangerous goods which may not be carried
- 2) Dangerous goods of the Operator (COMAT) and their handling
- 3) Dangerous goods which may be carried on special operations (e.g. air ambulance, tactical law enforcement, incendiary dropping, search and rescue, etc.)
- 4) Operator variations
- 5) Existing GCAA exemptions, deviations and waivers relating to dangerous goods that have been granted to the company.

#### 3.4 Dangerous Goods Carried by Passengers and Crew

The company dangerous goods manual shall be specific regarding the—

 Dangerous goods which passengers are permitted to have in carry-on baggage, on their person, and in their checked baggage.

This must include the procedures and responsibilities for obtaining and granting operator approval for those items that may only be carried with the approval of the operator.

- Provision of information to passengers at passenger check-in points, ticketing areas, baggage collection areas etc.
- 3) Disposal of dangerous goods confiscated on the aircraft, on the ground or in flight.

#### 3.5 Dangerous Goods Acceptance Procedures

- A. The company dangerous goods manual shall be have and require the use of an acceptance checklist to prevent acceptance of DG for transport by air unless the package complies with the ICAO-TI.
- B. Additionally, the company dangerous goods manual shall be specific regarding the-
  - Employees authorised to accept dangerous goods on behalf of the operator (this may be expressed by name or position title).

Where the responsibility is contracted to an agent, a reference to that agent should be made.

- Acceptance procedures;
- 3) Evaluation of the accompanying dangerous goods transport documents
- 4) Inspection of the-
  - (a) Marking'
  - (b) Packaging;'
  - (c) Overpack; and/or
  - (d) Freight container.
- Rejection processes
- Methods to aid the identification of hidden and/or mis-declared dangerous goods
  - ♦ Common mis-declared items
  - Requirements for consignor of cargo to make a signed statement of contents of cargo
- 7) Procedures for reporting discrepancies with the loading or the shipper's papers
- 8) Acceptable documentation of dangerous goods—
  - **♦** Checklists
  - ♦ NOTOCs
  - ♦ Freight manifests

#### 3.6 PACKAGE EVALUATION

The company dangerous goods manual shall be specific regarding—

- 1) Acceptable packaging requirements—
  - (a) The material must be properly packaged in accordance with the packaging rules and it must be properly marked, labeled, and documented.

- (b) The total quantity must be within the quantity limitations and the shipment must be accompanied by the proper shipping papers and GCAA or competent authority certificates, as determined by the inspection requirements for accepting shipments.
- 2) Procedures to ensure that the package is damage-free
  - ♦ The package may not leak or be damaged, and must be an authorized package in accordance with the applicable directives and Technical Instructions.
- 3) Procedures to ensure that the package is properly authorized for transport by air.
  - ♦ The package must either be authorized for transport in passenger-carrying aircraft or, if it is not acceptable for such aircraft, clearly labeled for cargo-only aircraft
- 4) Procedures to ensure that the package and its contents are properly identified.
  - The material must be identified by the proper shipping name, hazard class or division, identification number, and packing group, when required, in accordance with ICAO Technical Instructions.
- 5) Procedures to ensure that the package is properly marked and labeled in accordance with the ICAO-TI.
- 6) Procedures for review of shipping papers to ensure that all necessary information is entered, including any additional information that may be required because of the commodity shipped, or because the method of transportation is related to air transportation.

#### 3.7 STORAGE & HANDLING

The company dangerous goods manual shall be specific regarding the—

- 1) Procedures for accepting and storing cargo, including dangerous goods)
- 2) Retention of documentation
- 3) Segregation, storage and handling
- 4) Procedures for storage of Class 8 (corrosive) materials to prevent these materials from being stored next to, or in contact with, Class 4, Division 4.2 or 4.3 (flammable) solids or Class 5, Division 5.1 (oxidizing) materials must be prevented.
- 5) Procedures for storing any packages containing dangerous goods that might react dangerously when stored in a position that causes or contributes to leakage.
- 6) Procedures for storing Class 7 (radioactive) materials to include—
  - (a) Ensuring that the storage of Class 7 (radioactive) materials labeled yellow II and/or yellow III will not exceed a transport index (TI) of 50 in a single storage location.
  - (b) Ensuring that these materials are stored in an area that is isolated from people and does not permit pedestrian traffic or loitering.
  - (c) Maintaining the minimum separation distances prescribed in the Technical Instructions between radioactive materials labeled yellow II and yellow III and packages of undeveloped film.
- 7) Procedures to ensure that packages bearing a Class 6, Division 6.1 toxic substance label will not be stored in the same location as foodstuffs, feeds, or any edible materials intended for consumption by either humans or animals.

#### 3.8 Company Aircraft Loading Instructions

The company dangerous goods manual shall be specific regarding the loading of dangerous goods, including—

- 1) Aircraft hold diagrams location and numbering system
- 2) Inspection requirements for damage or leakage;
- 3) Aircraft loading and unloading procedures, including measures to ensure that "Cargo Aircraft Only" packages of dangerous goods are not loaded onto passenger aircraft
- 4) Stowage locations and quantities for radioactive substances (transport index limits), dry ice and magnetized material
- 5) Segregation requirements
- 6) Operator-specific requirements considering the nature of the hazard presented by certain classes of dangerous goods and the specific aircraft configuration (e.g., not storing corrosives next to emergency oxygen bottles or primary control cables)
- 7) Potential hazards associated with each class
  - ♦ Emergency action in the event of fire, spills or leakages
  - ♦ First aid
- 8) Loading of dangerous goods in aircraft in accordance with GCAD Part18.
- Loading and carriage of dangerous goods in cargo-only aircraft, when other means of transportation are not available or impracticable, in accordance with the Technical Instructions
- 10) Loading of radioactive materials in aircraft must be in accordance with the provisions of the Technical Instructions for transport of these packages.
- 11) Loading of dangerous goods in cargo compartments or freight containers within cargo compartments, in accordance with GCAD Part 18 and the Technical Instructions
- 12) A prohibition against loading packages bearing a poison label in the same compartment that holds foodstuffs, feeds, or any edible materials intended for consumption by humans or animals unless both commodities are in separate, closed-unit load devices known as freight containers.

#### 3.9 NOTIFICATION TO CAPTAIN [NOTOC]

The company dangerous goods manual shall be specific regarding the notification of the PIC when dangerous goods are carried on board the aircraft in accordance with GCAD Part 18, including—

- Responsibilities of load planners to ensure that the pilot in command has been notified of the presence, location and possible dangers of any dangerous goods loaded on the aircraft.
- Method of providing the written advice to pilot in command of DG location on boardthe aircraft
- 3) Responsibilities of the pilot-in-command to acknowledge advice
- 4) Procedures to have the NOTOC information for each flight on which dangerous goods are carried readily available to ground personnel during the flight by—
  - (a) Retaining a copy of the NOTOC at the departure airport; and

(b) Transmitting a copy of the NOTOC to the intermediate and destination airports prior to the expected time of arrival at those airports.

#### 3.10 EMERGENCY PROCEDURES

The company dangerous goods manual shall be specific regarding the—

- 1) Actions to be taken by employees in the event of an incident such as a spillage or leakage, on the ground or in-flight;
- 2) In-flight emergency response information;
- 3) Method of providing emergency response information to the pilot in command;
- 4) Instructions to pilot in command to report to ATS details of dangerous goods carried, in the event of an in-flight emergency;
- 5) Methods to be used to convey information to emergency services and to appropriate authorities in the event of an incident or accident of an aircraft carrying dangerous goods.

#### 3.11 Damage to Dangerous Goods Packages

The company dangerous goods manual shall be specific regarding the-

- 1) Procedures for handling—
  - (a) Damaged packages,
  - (b) Radioactive contamination, and
  - (c) Substances in Class 6, Division 6.2 (infectious substances).
- 2) Contact information (list of telephone number, addresses and emails) for organizations that can provide technical advice on—
  - (a) Clean-up techniques. and
  - (b) Precautions to minimize the possibility of injury to employees and the general public.

#### 3.12 Procedures for Reporting Dangerous Goods Incidents

The company dangerous goods manual shall be specific regarding the-

- 1) Definition of a dangerous goods incident;
- 2) Initial action;
- 3) Follow-up action;
- 4) Responsibility of employees to report; and
- 5) Procedures for reporting dangerous goods incidents, in compliance with Section 18.040.

#### Section 4 Company Dangerous Goods Training

The company dangerous goods manual (or a separate manual that is a part of the flight safety documents system) shall be specific regarding the—

- 1) Training requirements for its personnel and service providers;
- 2) Who is to be trained to what level and how often;
- 3) Approved training organization(s) that may be used;

- 4) Curriculums that may be used;
- Operator-specific material to be covered by employees who attend a generic external course;
- 6) Recording of training qualifications; and
- 7) Retention of training records.

#### SECTION 5 QUALITY ASSURANCE & AUDITING

#### **5.1** AUDIT POLICIES & CHECKLISTS

The company dangerous goods manual shall be specific regarding the-

- 1) Responsibility for quality assurance of the dangerous goods acceptance, storage, loading and transportation process.
- 2) Auditing checklists to be used to evaluate each phase of the process from-
  - (a) Original packaging of the dangerous goods
  - (b) Completion of shipping papers
  - (c) Acceptance or rejection at the airline
  - (d) Storage and handling
  - (e) Loading in shipping containers
  - (f) Loading on the aircraft
  - (g) Notification of pilot in command
  - (h) In-flight operations
  - (i) Any in-flight incidents regarding a dangerous goods shipment \\
  - (i) Any ground incidents, including leakage or storage location
  - (k) Training records and completion of all requirements
  - (I) Reporting of dangerous goods incidents

#### 5.2 AUDIT CYCLE & RESOLUTION POLICIES

- A. The companies or individuals that shall be audited on a 12-month cycle, to include all service providers, agents and company personnel that are involved in the process for shipping dangerous goods by air.
- B. The results of those audits including the actions taken to correct all audit findings.
- C. The retention of those audit and follow-up records for at least 24 calendar months.

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## APPENDIX A DG Manual Conformance Checklist

YES	NO	NS	NA	1	LEGISLATION & OTHER DOCUMENTS
				1.1	Does the manual have a listing of the applicable Ghana legislation covering consignment and carriage of dangerous goods?
				1.2	Does the manual have a listing of the applicable technical documents relating to dangerous goods matters and their location?
				1.3	Does the manual have policy emphasizing the need to comply with company policy and procedures in the DG manual?
YES	NO	NS	NA	2	GENERAL POLICIES
				2.1	Does the manual have policy guidance for dangerous goods that may not be carried?
				2.2	Does the manual have policy guidance for COMAT dangerous goods and how they will be handled?
				2.3	Does the manual have policy guidance for dangerous goods that may be carried on special operations?
				2.4	Does the manual have policy guidance regarding differences that are applicable to dangerous goods carriage on different types and variants of aircraft?
				2.5	Does the manual have policy guidance that explains all exemptions, deviations or waivers issued to the operator regarding the carriage of dangerous goods?
				2.6	Does the manual identify the employees (by name and title) that are authorized for to accept dangerous goods for the operator?
				2.7	If applicable, does the manual identify the agents (by company, name and title) that are authorized for to accept dangerous goods on behalf of the operator?
YES	NO	NS	NA	3	COMPANY POLICY & PROCEDURES
				3.1	Does the manual contain procedures for accepting and storing cargo (including dangerous goods?
				3.2	Does the manual contain methods to aid the identification of hidden and/or mis-declared dangerous goods?
				3.2	Does the manual contain guidance identifying the common misdeclared items?
				3.3	Does the manual contain requirements for consignor of cargo to make a signed statement of contents of cargo?
				3.4	Does the manual contain acceptance procedures and rejection processes procedures for dangerous goods?
				3.5	Does the manual contain dangerous goods handling checklists for each individual involved in the process to ensure safe acceptance?
				3.6	Does the manual contain instructions for the use and completion of the freight manifests and shipper's papers to ensure proper processing and handling of dangerous goods?
				3.7	Does the manual contain instructions the use and completion of the the acceptance checklists, NOTOCS, and related documents?

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				3.8	Does the manual contain policies and procedures for the retention of each of these documents?
				3.9	Does the manual contain policy and procedure for segregation, storage and handling of each class of dangerous goods that are accepted for shipment?
				3.10	Does the manual contain loading and unloading procedures for each class of dangerous goods?
YES	NO	NS	NA	4	DANGEROUS GOODS RESPONSIBILITIES
				4.1	Does the manual specify the persons that are responsible for keeping the dangerous goods manual amended and up-to-date?
				4.2	Does the manual specify the person/position that is responsible for acquiring and distributing reference materials and documentation, including the ICAO-TIs and IATA-DGRs?
				4.3	Does the manual specify the person/position that is responsible for ensuring that employees maintain currency in DG training and their records are up to date?
				4.4	Does the manual specify the person/position that is responsible for ensuring that agents and service providers are properly training, maintain currency with training and that their records are up-to-date?
					Does the manual specify the responsibilities of pilot-in-command to report to ATC details of dangerous goods carried in the event of an in-flight emergency?
YES	NO	NS	NA	5	PASSENGERS & DANGEROUS GOODS
				5.1	Does the manual list the dangerous goods which passengers are permitted to carry on board the aircraft on their person or in carry-on baggage?
				5.1	Does the manual list the dangerous goods which passengers are permitted to carry in their check-in baggage?
				5.2	Does the manual list the dangerous goods which crew members are allowed to carry on-board the aircraft?
				5.3	Does the manual contain the methods for provision of information to passengers at check-in points, ticketing areas and baggage collection areas?
				5.6	Does the manual have procedures for disposal of dangerous goods which are confiscated prior to carry-on or loading on the aircraft?
				5.6	Does the manual have procedures for disposal of dangerous goods which are confiscated on the aircraft while on the ground?
				5.6	Does the manual have procedures for disposal of dangerous goods which are confiscated on the aircraft while in flight?
YES	NO	NS	NA	1	OPERATOR-SPECIFIC DANGEROUS GOODS LOADING
				1.1	Does the manual clearly policy and guidance for the items of dangerous goods that are authorized for transport by company aircraft?
				1.2	Does the manual have diagram of aircraft hold locations that may be used for the transport of dangerous goods, including the hold numbering system?
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				1.4	Does the manual have procedures for consideration of the hazards of each class of dangerous good when loading the aircraft and the aircraft configuration (e.g. not storing corrosives next to emergency oxygen bottles or primary control cables)?
				1.3	If applicable, does the manual detail stowage locations, quantities and segregation for radioactive substances (transport index limits)?
				1.3	If applicable, does the manual detail stowage locations, quantities and segregation for dry ice?
				1.3	If applicable, does the manual detail stowage locations, quantities and segregation for magnetized material?
				1.5	Does the manual provide guidance for dealing with each class of dangerous goods to be carried, including the emergency action in the event of the fire, spills or leakages?
				1.6	Does the manual provide guidance for first aid in the event of a fire, spill or leakages, both on the ground and in-flight?
YES	NO	NS	NA	1	NOTICE TO CAPTAIN
				1.6	Does the manual contain instructions the use and completion of the NOTOC to ensure proper processing and handling of dangerous goods?
				1.1	Does the manual contain the responsibilities of load planners for providing NOTOC to the crew?
				1.2	Do the procedures outline the method of providing the completed NOTOC to the pilot in command to ensure receipt?
				1.3	Do the procedures require the pilot in command to acknowledge the receipt of the NOTOC?
				1.3	Do the procedures contain a method for providing emergency response information to the pilot in command?
YES	NO	NS	NA	1	EMERGENCY PROCEDURES
				1.6	Does the manual contain emergency procedures to deal with an incident or accident involving spillage or leakage on the ground?
				1.6	Does the manual contain emergency procedures to deal with an incident or accident involving spillage or leakage in-flight?
YES	NO	NS	NA	1	DANGEROUS GOOD INCIDENT PROCEDURES
				1.1	Does the manual have a definition of a dangerous goods incident?
				1.2	Does the manual have procedures specifying the initial actions that must be taken when a dangerous goods incident occurs?
				1.3	Does the manual have procedures specifying the follow-up actions that must be taken after the initial action procedures?
				1.3	Does the manual require that employee report dangerous good
					incidents?
				1.3	Does the manual have procedures for officially reporting dangerous goods incidents?
				1.3	Does the manual have procedures for officially reporting dangerous

	1.1	Does the manual include the requirement that all employees must complete initial DG training before conducting any task that might involve dangerous goods.
	1.3	Does the manual specify the level of training that each employee involved in the transportation of dangerous goods must complete?
	1.2	Does the manual include the requirement that all employees must complete recurrent DG training in order to continue conducting any task that might involve dangerous goods.
	1.3	Does the manual authorize the operator to conduct the required dangerous goods training?
	1.3	Does the manual authorize the operator to use service providers, such as approved training organizations, to conduct the required dangerous goods training?
	1.3	Does the manual contain the procedures for recording the employee initial and recurrent training?
	1.3	Does the manual include policy and procedures for the retention of those dangerous goods training records for each employee?

End of Advisory Circular

