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# The use of grey literature in health sciences: a preliminary survey\*

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The paper describes some initiatives in the field of grey literature (GL) and the activities, from 1985, of the Italian Library Association Study Group. The major categories of GL are defined; a survey that evaluates the use of GL by end users in the health sciences is described. References in selected periodicals and databases have been analyzed for the years 1987–1988 to determine the number of articles citing GL, the number of GL citations found in selected periodicals, the various types of GL found, and the number of technical reports cited and their country of origin and intergovernmental issuing organization. Selected databases were also searched to determine the presence of GL during those same years. The paper presents the first results obtained.

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## INTRODUCTION

The importance of grey literature (GL) as a means of primary, nonconventional communication is accepted in almost every scientific field. Both producers and users of GL have always considered it to be a primary source of information, although librarians have been reluctant to acquire this material and add it to their catalogs.

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GL covers a wide spectrum of nonconventional documents [1]. The following are some major GL categories as grouped for this study:

■ reports—including preprints; preliminary progress and advanced reports; institutional, internal,

technical, and statistical reports; research memoranda; state-of-the-art reports; market research reports; reports of commissions and study groups; etc.

- theses
- conference proceedings
- technical specifications and standards
- translations (not distributed commercially)
- bibliographies
- technical and commercial documentation
- official documents (issued in limited numbers)

It is often difficult to define the distinction between official publications and GL [2–3]; among other definitions (ephemeral, invisible, informal, underground, etc.), GL has been recently defined as semi-published [4]. According to the most widespread and generally recognized definition, GL is all that nonconventional material which is “not available through the conventional, commercial distribution channels.” Yet, it must be remembered that in some countries (e.g., the United States and the United Kingdom), there are long-established distribution agencies that make it possible to obtain GL on request and for payment. In other countries, where there is no centralized agency for the distribution of GL, it is not as easy to obtain and to retrieve the same material.

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The acceptance of the collective term GL dates to the York Seminar of 1978 [5], which was a milestone in its development. It was clearly recognized that GL was, in fact, a primary information source, thus confirming previously published evaluations [6-7]. The seminar resulted in the creation of the System for Information on Grey Literature in Europe (SIGLE) database, which was initially supported by the European Economic Community (EEC) and is now managed by the European Association for Grey Literature Exploitation (EAGLE). Italy joined this association at its foundation through its national reference center, the Central Library of the Italian National Research Council.

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The Italian Library Association (AIB) recognized the importance of this European initiative and, to clarify the Italian situation regarding GL, created a study group in 1985 with the following objectives:

- to enable librarians and documentalists to improve the processing and retrieval of GL;
- to define the limits of what is considered GL and what is not, according to definitions at the international and local levels;
- to identify the major Italian producers of GL;
- to survey the collections of technical reports (Italian and foreign) available in Italian libraries and documentation centers;
- to improve and encourage the use of standards for the presentation and cataloging of technical reports; and
- to promote the diffusion of SIGLE and improve general knowledge about the problems of GL through workshops, seminars, and study days.

Different aspects of GL have been considered, particularly its use, which varies in the different fields of science and is difficult to evaluate.

The authors, therefore, began a study at the Istituto Superiore di Sanità, the Italian National Health Institute, to evaluate the use of GL in health sciences. The institute is the scientific technical body of the Italian Ministry of Health and of the Italian National Health Service. It is organized into twenty laboratories and several support units.

## MATERIALS AND METHODS

The scope of this research was the assessment of the use of GL by researchers working in the health sci-

ences. Since information needs vary according to both objective and subjective factors (subject fields of work—basic or applied research, education, past work and experiences, status, etc.), the types of needed information will vary. The needs of health care practitioners, for example, are completely different from the needs of researchers working in the basic sciences, applied research, or clinical science; even among these researchers, there are different approaches to the sources of information [8].

To evaluate the actual use of GL by end users, the study examined the references of selected periodicals and databases.

### Periodicals

In examining periodicals, the following criteria were adopted [9]:

- selecting core periodicals in the health sciences
- choosing the periodicals to be analyzed
- analyzing periodicals to find where GL is cited in references and where it is not
- analyzing the types of GL found in references
- analyzing technical reports by originating country
- analyzing technical reports produced by intergovernmental organizations.

A first choice of the journals was made by considering their distinction in different groups by subject; among these groups, general scientific journals (such as *Science* and *Nature*) and general medical journals (such as the *Lancet* and the *New England Journal of Medicine*) were excluded. Weekly periodicals were excluded since their manual analyses would have required excessive time in this preliminary survey.

Within this selected set, only periodicals covering health sciences were taken into account. Health sciences, however, includes a large number of interrelated disciplines, and only a few could be considered. The interest of the authors, who belong to one of the major Italian health research institutes, was addressed mainly to those specific disciplines in which their daily activities are involved. The selection of journals was also compared with core lists [10-13] to verify their relative importance. The patterns of use in the library of the institute and the number of the contributions given to the journals by the researchers of the institute itself were taken into account in reducing the set of journals to be investigated.

To lay the groundwork for the study, the authors randomly surveyed a sample of periodicals that were found in the collection of the library of the Istituto Superiore di Sanità; the library's collection includes 3,500 current periodicals and 160,000 book volumes. The purpose of this research was to test the effectiveness of the methodology on a small sample; a full-scale survey will be developed in the future. The appendix contains a list of the periodicals used in the

**Table 1**  
Articles directly citing GL in selected periodicals (1987–1988)

Titles	Total number of articles	Articles with GL (%)
<i>Annali dell'Istituto Superiore di Sanità</i>	156	52 (33.3%)
<i>Food Chemistry</i>	232	147 (63.4%)
<i>International Journal of Epidemiology</i>	257	176 (68.5%)
<i>Physics in Medicine and Biology</i>	270	164 (60.7%)
<i>Regulatory Toxicology and Pharmacology</i>	74	54 (73.0%)
<i>Water Research</i>	409	340 (83.1%)
Total	1,398	933 (66.7%)

study. Titles studied are marked with an asterisk. The "Instructions for Authors" in each title were examined to assess the importance given to GL. The initial review indicated no special reference to technical reports, but the *New England Journal of Medicine* did include a technical report in its list of sample references. Personal communications are not accepted in references very often and in this study have been treated separately.

This study ultimately focused on the following titles for the period 1987–1988: *Annali dell'Istituto Superiore di Sanità* (quarterly), *Food Chemistry* (sixteen issues per year), *International Journal of Epidemiology* (quarterly), *Physics in Medicine and Biology* (monthly), *Regulatory Toxicology and Pharmacology* (quarterly), and *Water Research* (monthly). *Annali dell'Istituto Superiore di Sanità* was included in this study since it is the official journal of the institute, even though it does not appear in the core lists.

### Databases

To evaluate the incidence of GL in databases, the authors searched PASCAL and MEDLARS.† The search strategy was limited to 1987–1988, as it was for periodicals. In PASCAL the following subjects were considered: epidemiology (general aspects), molecular and cell biology, pharmacology, medical physics, and toxicology. In MEDLARS the search was limited to TOXLIT§ and CANCERLIT.\*\* Technical reports and theses were searched for in PASCAL and TOXLIT; in CANCERLIT government reports were searched since this database groups technical and government reports as one category.

### RESULTS

Table 1 indicates the number of articles (66.7%) that cited GL compared to the total number of articles.

†§\*\* MEDLARS, TOXLIT, and CANCERLIT are registered trademarks of the National Library of Medicine.

**Table 2**  
References to GL in the bibliographies of articles in selected periodicals (1987–1988)

Titles	Total number of references	References to GL (%)
<i>Annali dell'Istituto Superiore di Sanità</i>	1,822	277 (15.2%)
<i>Food Chemistry</i>	2,950	315 (10.7%)
<i>International Journal of Epidemiology</i>	4,196	588 (14.0%)
<i>Physics in Medicine and Biology</i>	3,334	564 (16.9%)
<i>Regulatory Toxicology and Pharmacology</i>	2,172	431 (19.8%)
<i>Water Research</i>	7,598	1,351 (17.8%)
Total	22,072	3,526 (16.0%)

The number of reference lists with GL varied greatly—in some cases only one GL item appeared, and in others the majority of the citations were GL.

Table 2 shows the total number of GL references compared to the total number of references. Excluded are articles with no GL references (Table 1). The percentage of GL (16.0%) confirms that GL is a primary source, used by researchers who are also producers of GL.

Table 3 illustrates the type of GL in the references of the periodicals studied. Reports (68.3%) were the major type of GL cited; proceedings and theses also played an important role. Of the GL grouped under "Others," standards ranked first.

*The prevalence of English is due to the United States' role as the most important producer of technical reports and also because English has become the scientific communication language.*

The next stage of the study analyzed the origin of technical reports since they were the most representative type of GL identified. Table 4 shows the geographic or intergovernmental agency origin of this material. A total of 78.1% of the reports were produced by single nations, compared to only 21.9% produced by intergovernmental organizations. The countries whose production of technical reports were most used are English-speaking: the United States, the United Kingdom, and Canada. Very little Canadian literature was published in French. The prevalence of English is due to the United States' role as the most important producer of technical reports [14] and also because English has become the scientific communication language.

France and Germany (F.R.G.) were considered separately because their languages are, after English, the most well known [15–16]. Under "Others," a major

**Table 3**  
Types of GL appearing in the bibliographies of articles in selected periodicals (1987–1988).

Titles	References to GL	Reports (%)	Proceedings (%)	Theses (%)	Others* (%)
<i>Annali dell'Istituto Superiore di Sanità</i>	277	197 (71.1%)	57 (20.6%)	5 (1.8%)	18 (6.5%)
<i>Food Chemistry</i>	315	137 (43.5%)	72 (22.9%)	86 (27.3%)	20 (6.3%)
<i>International Journal of Epidemiology</i>	588	516 (87.7%)	32 (5.5%)	23 (3.9%)	17 (2.9%)
<i>Physics in Medicine and Biology</i>	564	375 (66.5%)	79 (14.0%)	62 (11.0%)	48 (8.5%)
<i>Regulatory Toxicology and Pharmacology</i>	431	359 (83.3%)	58 (13.4%)	2 (0.5%)	12 (2.8%)
<i>Water Research</i>	1,351	823 (60.9%)	247 (18.3%)	212 (15.7%)	69 (5.1%)
Total	3,526	2,407 (68.3%)	545 (15.5%)	390 (11.1%)	184 (5.2%)

\* Including standards, unpublished data, private or personal communications, translations, etc.

**Table 4**  
Technical reports in selected periodicals (1987–1988) by source: single country geographical origin versus intergovernmental organizations

Titles	Technical reports	Geographical origin						Intergovernmental organizations (%)
		Canada (%)	France (%)	Germany (%)	UK (%)	USA (%)	Other countries* (%)	
<i>Annali dell'Istituto Superiore di Sanità</i>	197	2 (1.0%)	1 (0.5%)	1 (0.5%)	1 (0.5%)	39 (19.8%)	38 (19.3%)	115 (58.4%)
<i>Food Chemistry</i>	137	8 (5.8%)	1 (0.7%)	—	16 (11.7%)	44 (32.1%)	24 (17.6%)	44 (32.1%)
<i>International Journal of Epidemiology</i>	516	21 (4.1%)	7 (1.3%)	2 (0.4%)	59 (11.4%)	162 (31.4%)	98 (19.0%)	167 (32.4%)
<i>Physics in Medicine and Biology</i>	375	1 (0.3%)	4 (1.1%)	13 (3.4%)	55 (14.7%)	188 (50.1%)	24 (6.4%)	90 (24.0%)
<i>Regulatory Toxicology and Pharmacology</i>	359	10 (2.8%)	1 (0.3%)	20 (5.6%)	2 (0.5%)	223 (62.1%)	36 (10.0%)	67 (18.7%)
<i>Water Research</i>	823	41 (5.0%)	13 (1.6%)	25 (3.0%)	63 (7.7%)	502 (61.0%)	135 (16.4%)	44 (5.3%)
Total	2,407	83 (3.4%)	27 (1.1%)	61 (2.5%)	196 (8.1%)	1,158 (48.1%)	355 (14.7%)	527 (21.9%)

\* Under the term "Others," a major percentage is from Sweden, Norway, Japan, and the Netherlands.

**Table 5**  
Technical reports produced by intergovernmental organizations in selected periodicals (1987–1988)

Titles	Total number of technical reports	EEC (%)	FAO (%)	IAEA (%)	IARC (%)	OECD (%)	WHO (%)	Others* (%)
<i>Annali dell'Istituto Superiore di Sanità</i>	115	9 (7.8%)	1 (0.9%)	30 (26.1%)	39 (33.9%)	14 (12.2%)	12 (10.4%)	10 (8.7%)
<i>Food Chemistry</i>	44	1 (2.3%)	29 (65.9%)	3 (6.8%)	3 (6.8%)	—	7 (15.9%)	1 (2.3%)
<i>International Journal of Epidemiology</i>	167	5 (3.0%)	3 (1.8%)	—	44 (26.3%)	2 (1.2%)	102 (61.1%)	11 (6.6%)
<i>Physics in Medicine and Biology</i>	90	8 (8.9%)	—	21 (23.3%)	—	1 (1.1%)	—	60 (66.7%)
<i>Regulatory Toxicology and Pharmacology</i>	67	6 (8.9%)	3 (4.5%)	2 (3.0%)	16 (23.9%)	3 (4.5%)	28 (41.8%)	9 (13.4%)
<i>Water Research</i>	44	8 (18.2%)	4 (9.1%)	—	—	17 (38.6%)	11 (25.0%)	4 (9.1%)
Total	527	37 (7.0%)	40 (7.6%)	56 (10.6%)	102 (19.4%)	37 (7.0%)	160 (30.4%)	95 (18.0%)

\* Under "Others," a major percentage is from UNO (United Nations Organization) and ILO (International Labour Organization).

percentage came from Sweden, Norway, Japan, and the Netherlands. Technical reports were usually written in the native language of the producers and, as a consequence, they were mainly cited in bibliographies when the authors of the article were from the same country as the report's authors.

Among the intergovernmental organizations (Table 5), the World Health Organization (WHO) produced the highest number. Together, WHO and International Agency for Research on Cancer (IARC) publications form an important part of the world's biomedical literature [17]. Given the limited data

**Table 6**  
 Technical reports and theses (GL) cited in selected databases (1987–1988)

Database	Total number of references (*)	GL (%)	GL	
			Technical reports (%)	Theses (%)
PASCAL	950,000	14,353 (1.5%)	4,443 (31.0%)	9,910 (69.0%)
TOXLIT	200,000	4,662 (2.3%)	2,563 (55.0%)	2,099 (45.0%)
CANCER-LIT	75,393	1,164 (1.5%)	109 (9.4%)	1,055 (90.6%)

(\*) The total number of references was calculated on the basis of the mean annual increase.

available, it is difficult to assess the use of technical reports from these organizations. Of course, the scientific areas covered by the periodicals chosen explain the presence of some agencies and the absence of others.

Table 6 provides a general picture of the output of GL (only technical reports and theses) in three databases. The percentage of these forms of GL was very low with theses generally exceeding technical reports. It would have been interesting to study each item in detail, in order to obtain the same tables as those given for periodicals; however, this was not possible due to the structure of the files.

## CONCLUSIONS

As a primary source of information, GL was cited mainly in the bibliographies of those journals that provided reliable data on research in progress or primarily deal with scientific developments as influencing regulatory government decisions (Table 2).

Technical reports prevailed over other types of GL (68.3%) (Table 3), thus confirming the attention given in literature to this material with bibliographical and cataloging initiatives [18]. The results obtained showed that proceedings and theses generally play an important role in the ranks of GL.

The United States, the United Kingdom, and Canada were the countries whose production of technical reports was most often used. Although the language in which technical reports were written was not examined in this study, data on their geographical origin showed that the majority were in English since technical reports are generally produced in local languages [19].

Among the intergovernmental organizations, WHO had the highest percentage (30.4%) (Table 5), followed by IARC (19.4%). The percentage of reports issued by intergovernmental organizations was relatively high (21.9%) in comparison with reports pro-

duced by single countries as a whole (Table 4). The presence of GL in the selected databases was very low; among types of GL considered, theses generally exceeded technical reports (Table 6).

In conclusion, it should be stressed that the experimental character of this study permitted the authors to identify the focal points to be considered for the evaluation of the use of GL that is projected for future research.

## REFERENCES

1. POSNETT NW. Factors affecting the accessibility of non-conventional literature for use in the United Kingdom and some possible solutions. *Libr Acqui* 1984;8:275–85.
2. ROZKUSZKA W. The art and acquisition of foreign official publications. In: Johansson E, ed. *Official publications of Western Europe*. v. 1. London: Mansell, 1984:1–11.
3. ABBOTT HODUSKI BE, TRAUTMAN M, EDS. *International Conference of Government Publishers, Printers, Librarians and Users. Proceedings, Saratoga Springs Meeting, Aug 29–Sep 1, 1982*. Washington, DC: IFLA—Official Publications Section, 1983:3–4.
4. Definition of "grey literature" as "semi-published works." *Curr Res Libr Inf Sci* 1988;6(4):n.p.
5. GIBB GM, PHILLIPS E. A better fate for the grey, or non-conventional, literature. *J Res Commun Stud* 1989;1:225–34.
6. ATHERTON P. *Handbook for information systems and services*. Paris: Unesco, 1977:8.
7. ROOPER FW. U.S. government documents and technical reports. In: Roper FW, Boorkman JA, eds. *Introduction to reference sources in the health sciences*. 2d ed. Chicago: Medical Library Association, 1984:87–94.
8. WEISS P. *Health and biomedical information in Europe*. Copenhagen: WHO/EURO, 1986:9–13. (Public health in Europe, 27.)
9. SCHUBERT A, GLÄNZEL W, BRAUN T. Scientometric data-files: a comprehensive set of indicators on 2,649 journals and 96 countries in all major science fields and subfields 1981–1985. *Scientometrics* 1989;16(1–6):3–478.
10. COOK S. A core list of periodicals for health-care management libraries. *Health Libr Rev* 1987;4:14–25.
11. UNISIST. *Core list of journals in the life sciences (Pilot version)*. Paris: Unesco, 1979. (PGI/79/WS/12)
12. GARFIELD E. Trends in biochemical literature. *Trends Biochem Sci* 1979;4(4):291–5.
13. PRICE C, BURLEY RA. An evaluation of information sources for current awareness on occupational diseases. *J Inf Sci* 1986;12(5):247–55.
14. HOUGHTON B, ED. *Technical information sources*. London: Bingley, 1972:91–6.
15. PERITZ BC. The literature of demography; its characteristics and changes over time. *J Inf Sci* 1988;14:99–107.
16. THORP RG, SCHUR H, BAWDEN D, JOICE JR. The foreign language barrier: a study among pharmaceutical research workers. *J Inf Sci* 1988;14(1):17–24.
17. WEISS, op. cit.
18. ALBERANI V, DE CASTRO PIETRANGELI P, MORRONI E. *Letteratura grigia: una selezione bibliografica*. *Boll Inf AIB* 1987 Jul/Dec;27(3/4):465–75.

19. POSNETT NW, BAUKWILL WJ. Working with non-conventional literature. *J Inf Sci* 1982;5(5):121-30.

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**APPENDIX**

**Periodicals studied**

*Annali dell'Istituto Superiore di Sanità\**  
*Biochimica et Biophysica Acta*  
*Biochemistry and Cell Biology*  
*British Medical Journal\**

*Cell*  
*Cell and Tissue Research*  
*Community Medicine\**  
*The EMBO Journal*  
*FEBS Letters*  
*Food Chemistry*  
*The Health Service Journal\**  
*Health Service Research (USA)\**  
*International Journal of Epidemiology\**  
*Lancet\**  
*Medical Care (USA)\**  
*Medical Science Research*  
*New England Journal of Medicine*  
*Physics in Medicine and Biology\**  
*Proceedings of the National Academy of Sciences (USA)*  
*Public Health\**  
*Regulatory Toxicology and Pharmacology\**  
*Water Research\**

\* Titles examined in the initial study.

Italiae, 1648. Drawn by Philip Briet, S. J. (1601–1668). Figure originally published in *Geog. Vet et Novae*. (R. V. Tooley, comp. *Tooley's Dictionary of Mapmakers*. Amsterdam: Meridian Publishing Co., 1979.)

