

# International Preservation News

*A Newsletter of the IFLA Core Programme for Preservation and Conservation (PAC)*

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## Editorial

This issue of IPN essentially deals with permanent paper, a major concern of PAC. The IFLA Section on Preservation and Conservation, with which we have very special and close ties, has given us the authorization to reproduce the text of the brochure on permanent paper which was published last year. We have decided to include French and Spanish translations of the original text in English, in order to achieve a wider dissemination. We do hope that this text will help you persuade each one of your UNESCO National Commissions to back the resolution on the use of permanent paper which Canada is to propose to the vote of the General Conference of UNESCO next October. Likewise it should help you persuade readers, librarians and booksellers as well as publishers and printers that using permanent paper is one of the most secure and cost-effective way of preserving our written heritage.

When hopefully adopted, this resolution will have to be made public to a larger public, government authorities, papermakers and paper distributors. In order to achieve this goal, PAC has decided to put together a mobile exhibition on boards to offer libraries, which could be supplemented with deteriorated samples taken out of their own collections, in order to make it more striking. Initially, the exhibition will be intended for use around France, but if it proves successful, its wording will be translated into different languages and offered to other countries.

## Editorial

Ce numéro d'IPN est presque intégralement consacré à l'un des problèmes majeurs du PAC, à savoir le papier permanent. La Section de Préservation et de Conservation de l'IFLA, avec laquelle nous entretenons des liens de coopération très étroits, nous a autorisés à reproduire le texte sur le papier permanent qu'elle a publié l'an dernier.

Afin de toucher une plus large audience, nous avons décidé d'y adjoindre la traduction en français et en espagnol du texte original en anglais. Nous espérons que cela s'avèrera utile pour convaincre vos commissions nationales auprès de l'UNESCO de soutenir la résolution sur l'utilisation du papier permanent que le Canada va proposer au vote de la Conférence Générale de l'UNESCO en octobre prochain. Cela devrait également vous aider à convaincre les lecteurs, les bibliothécaires et les libraires ainsi que les éditeurs et les imprimeurs, que le papier permanent constitue actuellement l'une des mesures les plus sûres et les moins onéreuses pour préserver notre patrimoine écrit.

Si, comme nous l'espérons, cette résolution est adoptée, il sera nécessaire de le faire savoir au grand public, aux autorités gouvernementales, aux fabricants de papier et aux distributeurs. C'est pourquoi le PAC a décidé de monter une exposition itinérante sur panneaux qui sera proposée aux bibliothèques qui pourront la compléter par des exemples d'ouvrages sur papier acide de

leurs propres collections. Destinée dans un premier temps à circuler en France, cette exposition sera, selon le succès remporté, traduite en plusieurs langues et proposée à d'autres pays.

Marie-Thérèse Varlamoff

## **Preserving our Documentary Heritage - The case for Permanent Paper**

**Attention: Paper Manufacturers and Distributors, Printers, Publishers**

### **Do You Know that**

- hundreds of millions of books and documents on library and archive shelves are self-destructing because, since the 1850s, they have been printed or written on paper manufactured partly from mechanical wood pulp and/or sized in an acid medium? and this acid paper turns yellow, becomes brittle and eventually crumbles into dust?
- the costs of preservation through micrographic or optical disk technology, digitization, deacidification, or other conservation treatment - in order to salvage most of the written cultural and scientific heritage of the last 150 years - are beyond the financial resources of even the world's largest national and research libraries?

### **Are You Aware that**

- the problem can be contained and made finite if, in future, all publications of enduring value are printed on acid-free permanent paper?
- acid-free permanent paper is no more costly than acid paper and is environmentally sound?
- librarians and archivists have been campaigning for standards for permanent paper manufacture, and legislative action to enforce its usage, for all publications of long-lasting interest, but that they still need the help of paper manufacturers and distributors, printers and publishers?
- all persons and institutions concerned with the preservation of the written heritage and paper production in any country now have a common standard allowing coordination of efforts and measures to be taken for the promotion of permanent paper?

### **What is Permanent Paper ?**

The short answer is paper which meets the specifications of standards designed to ensure it will remain stable over long periods of time. "Permanent" refers to the paper's chemical and physical properties, which increase longevity but do not prevent recycling. Some countries (including Australia, Canada and the U.S.A.) have developed, or are developing, their own standard for long life permanent paper, but a universal or base level standard issued by the International Organization for Standardization (ISO) is now available.

### **What is the International Standard ?**

ISO 9706: 1994 - Information and Documentation - Paper for Documents - Requirements for

Permanence. (Geneva: International Organization for Standardization, March 1994).

The ISO committee (ISO/TC 46/SC10/WG1) charged in 1988 with formulating an international standard took as its starting point the American National Standard for Information Sciences - Permanence of Paper for Printed Library Materials (ANSI Z39.48-1984), published in New York in 1985 by the American National Standards Institute. This was revised in 1992 as American National Standard for Permanence of Paper for Publications and Documents in Libraries and Archives (ANSI/NISO Z39.48-1992). The technical requirements of ISO 9706: 1994 are based on those specified in the revised American edition, and are very similar. Both cover coated as well as uncoated paper.

Publications on papers meeting the specifications of ISO 9706: 1994 are entitled to use the symbol denoting compliance. This is the mathematical sign of infinity set inside a circle and placed above the number of the international standard.

### **Example :**

If preferred, or as well as the symbol, a statement may be used. The recommended wording is: This paper meets the requirements of ISO 9706: 1994 - Information and Documentation - Paper for Documents - Requirements for Permanence.

These are papers that under long-term storage in libraries and archives are estimated to last several hundred years without discolouring or becoming brittle when used or copied. By contrast, the bulk of the papers used in books, journals and documents since the mid-1800s significantly deteriorates within the average human life span. It should be noted that permanent papers are alkaline rather than acid, and alkaline papers generally will last longer than acid ones, but the additional requirements for permanent papers are designed to provide even longer life. Calcium carbonate as a filler is the criterion of permanence because it prevents the paper from being acid. It can be used only if the sizing is made in a neutral or alkaline medium. After this, the difference between the acid-free and permanent papers should be determined, because they are often mixed and used as if they were the same. The main differences are the presence of at least 2% calcium carbonate and the absence or the minimum of lignin. Permanent papers have to meet these requirements, while acid-free papers do not.

## **Why Use Permanent Paper ?**

The answer is to preserve our documentary heritage, and at the same time avoid further depletion of the limited budgets of libraries and archives throughout the world, as they try to salvage brittle materials through conservation treatments, replacement or re-formatting.

It is therefore, in everyone's interest to accelerate the movement already well under way in many countries towards the use of permanent paper. The beneficiaries (in addition to libraries and archives) include:

- authors, who will not find their works lost to history,
- researchers, who want access to information,
- scholars, who write history,
- publishers and printers, not only to please libraries and other customers, but also as

professionals taking pride in their work; and because the more that is spent on the preservation of existing works, the less is likely to be available for purchasing new publications,

- governments, that also have an archival responsibility, as well as direct monetary interest in minimizing expenditures for the preservation of existing publications and documents,
- citizens, who wish to save publications and documents for their descendants, and not be forced to seek out costly technical methods of preservation.

### **Is Permanent Paper more Expensive ?**

No, it should not be. The alkaline paper-making process, which is the starting point for the production of permanent paper is fully competitive. The process is cleaner and less corrosive to the plant than the acid-based one. Energy costs are lower. Less pulp fibre is required as filler and less fresh water is consumed. The process may also result in reducing the cost of conforming to anti-pollution standards. In some countries (e.g. Canada), a number of mills have already converted to alkaline paper products for economic reasons.

### **Is Permanent Paper Environmentally Sound ?**

Yes, while preserving our published heritage through the use of permanent paper, we can also promote the preservation of the earth. Librarians and archivists welcome the reclaiming and recycling of waste paper for environmental as well as economic reasons. Acid-free permanent paper has less of an adverse impact on the environment. Alkaline paper mills produce less pollution than acid paper mills, and permanent paper is recyclable and biodegradable. Why not Use Recycled Paper for New Books ?

As a general rule, recycled paper should not be used for printed materials which are to be retained permanently. Recycled pulp often contains a mixture of acid and other unsuitable fibres. Permanent or archival paper must be manufactured from chemically treated virgin fibres.

As the use of permanent paper increases, more recycled supply may become available for the manufacture of new books. But recycled paper is not infinitely reusable, and needs a component of virgin fibre to provide strength. The objective now is to continue to develop and make recycled papers that offer purchasers the same choice, quality and levels of permanence as non-recycled papers.

### **Is Permanent Paper Readily Available ?**

Yes, from sources in many countries, but this is a quite recent development. Some countries (e.g. Canada, Finland, France, Germany, Great Britain) issue lists of suppliers of alkaline and permanent papers which meet national standards, and such lists are usually available free of charge from national libraries. Two very important catalogues of papers which their manufacturers report as conforming to either the ANSI/NISO or the ISO standard, or both, are now available.

- In 1993, the European Foundation for Library Cooperation/Groupe de Lausanne began to issue the European Directory of Acid-Free and Permanent Book Paper, to aid and encourage European publishers to print their publications on permanent paper. The second edition (1994) lists the characteristics of some 100 certified permanent book papers

produced by 23 manufacturers in 10 countries. The details given for each paper include coating, colours, weights, and to which standard it conforms.

- Since 1994, the non-profit organisation, Abbey Publications, Inc. of Austin, Texas, has been publishing an annual directory entitled North American Permanent Papers. The 1995 edition lists by company name and paper type, some 446 permanent papers made by 39 manufacturers meeting the requirements of ANSI/NISO Z39.48-1992, with recycled and postconsumer content for each, and much other useful and historical information.

## **How Much Permanent Paper is Actually Being Used?**

At present, the available data on the proportion of books, journals and documents printed or written on permanent paper is limited. But, with so much printing and writing permanent paper being produced, actual use must be increasing. The first step towards better statistical data would be for publishers routinely and without exception to note in the publications themselves the nature of the paper. This could then be entered into the bibliographic records and national agencies administering «cataloguing-in-publication» programmes could compile statistics. This data would also enable individual libraries to prepare inventories, identifying those items in their collections on long-lived paper from those more vulnerable to deterioration. The publishers or printers can note the nature of the paper, however, if the manufacturers are aware which of their products meet the requirements of the standard and they indicate this fact unambiguously either on the product or in its description.

We do have, however, two «snapshots» of the present status of actual use in publications, one encouraging and the other much less so.

In 1987 the National Library of Medicine in Washington undertook a campaign to encourage the use of alkaline or permanent papers in the biomedical journals indexed in its Index Medicus. Before this programme was begun, only 108 of these journals were printed on acid-free paper. By 1991 this number had grown to 1,462, or 48% of the total. For some countries, the percentage was much higher. In addition, a quarter of these journals carried notations that the paper used was acid-free.

On the other hand, a 1993/94 survey on the use of permanent book paper by some 2,000 European publishers in 18 countries, conducted by the European Foundation for Library Cooperation (EFLC) with the assistance of the Dutch company Swets & Zeitlinger, shows a lack of awareness of the major problem of brittle books in the preservation of the written cultural heritage in their countries, and of the existence of permanent paper for printing new books as the simplest way of prevention in the future. Only 68 publishers (most of them scientific) out of the 142 who responded from 13 countries indicated they were using non-acid paper. Some of the 74 publishers from 14 countries reporting they do not use acid-free paper were unaware of its availability. Presumably the 1800 publishers who did not reply can be assumed not to be using acid-free paper and/or not to be aware either of the problem or the availability of the acid-free permanent paper.

## **Librarians Take up the Challenge**

Since the late 1950s, librarians and archivists have been aware of the causes of paper deterioration and of the means to produce alkaline paper. In the 1960s, they began encouraging

publishers and other users of paper to find and buy the alkaline and permanent paper which has become increasingly available. Great progress has been made in the last ten years, in awareness, in permanent paper availability, and in actual usage, but much still remains to be done. In 1989 and 1991, the International Federation of Library Associations and Institutions (IFLA), representative of libraries at world level, adopted resolutions advocating international manufacture and use of acid-free permanent paper, and adherence to an international standard. It is hoping that UNESCO will urge its member governments to promote compliance with the ISO standard subsequently developed and promulgated.

Six ways in which paper manufacturers and distributors, Printers and publishers, can help librarians and archivists in a working alliance to safeguard our collective cultural memory:

1. Be aware of compliance with the ISO standard in manufacturing printing and writing papers, and note this compliance on your products.
2. Educate the members and affiliates of your professional and trade associations on the importance of using permanent paper, and urge them to endorse the use of papers which comply with the international standard, as a matter of high priority for all publications of enduring value.
3. Display the symbol, or statement, or both, on all publications which comply with this standard, and include the information in advertising, packaging, promotions, reviews, sales, catalogues, and submissions to cataloguing-in-publication programmes.
4. Press all levels of government to adopt a policy of using permanent paper for historical and archival purposes, either by legislation or by executive order.
5. Compile statistics on the production of alkaline and permanent paper, publicize the findings, and urge that production be increased to serve local demand.
6. Support funding for ongoing research into the causes of, and the solutions to, paper deterioration, and for further initiatives to preserve collections in libraries and archives.

The mass production and use of permanent paper will help to ensure that the world's documentary heritage is available for the use, enjoyment and advancement of future generations.

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ISO 9706: 1994 - Information and Documentation - Paper for Documents - Requirements for Permanence. Geneva: International Organization for Standardization, 1994.

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## FOR FURTHER CONSULTATION

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## Conserver notre patrimoine écrit

### Le papier permanent en question

**A l'attention des fabricants de papiers, des distributeurs, des imprimeurs et des éditeurs**

### Savez-vous que

- des centaines de millions de livres et documents s'autodétruisent sur les rayonnages des bibliothèques et des archives ? En effet, depuis les années 1850, ils sont imprimés ou écrits sur un papier fabriqué en partie à base de pâte mécanique et/ou encollés en milieu acide. Ce papier acide jaunit, devient cassant et finit par tomber en poussière,
- les coûts de conservation au moyen des techniques de reproduction par micrographie ou par numérisation sur disque optique, les techniques de désacidification ou autres

traitements de conservation (afin de sauver la plus grande partie du patrimoine culturel et scientifique des 150 dernières années) dépassent les ressources budgétaires des bibliothèques y compris des très grandes bibliothèques nationales et de recherche ?

## **Etes-vous conscient que**

- le problème peut être maîtrisé et résolu si, à l'avenir, toutes les publications dont on souhaite assurer la pérennité sont imprimées sur du papier permanent sans acide ?
- le papier permanent sans acide ne coûte pas plus cher que le papier acide et préserve l'environnement ?
- les bibliothécaires et les archivistes œuvrent pour la mise au point de normes sur la fabrication du papier permanent et pour que des lois imposent son utilisation pour les publications présentant un intérêt à long terme? Afin d'y parvenir ils ont besoin du soutien des fabricants, des distributeurs, des imprimeurs et des éditeurs.
- dans tous les pays, les personnes et institutions concernées par la conservation du patrimoine écrit et la fabrication du papier disposent à présent d'une norme commune permettant de coordonner les efforts et les mesures à prendre pour promouvoir le papier permanent ?

## **Qu'est-ce que le papier permanent ?**

Pour répondre brièvement, c'est un papier conforme aux prescriptions des normes établies pour assurer une stabilité à long terme. Le mot "permanent" définit un papier dont les propriétés physico-chimiques accroissent la longévité sans nuire au recyclage. Certains pays (comme l'Australie, le Canada ou les Etats-Unis) ont mis au point ou sont en train de mettre au point leur propre norme de longévité pour le papier permanent, mais une norme internationale de base, publiée par l'ISO (Organisation internationale de normalisation) est déjà disponible.

## **Qu'est-ce que la norme internationale ?**

ISO 9706: 1994 - Information et documentation - Papiers pour documents - Prescriptions pour la permanence. (Genève: Organisation Internationale de Normalisation, mars 1994).

Le Comité ISO (ISO/TC46/SC10/WG1) chargé en 1988 de rédiger une norme internationale prit comme point de départ la norme américaine American Standard for Information Sciences - Permanence of Paper for Printed Library Materials (ANSI Z39.48-1984), publiée à New York en 1985 par l'American Standards Institute. Sa révision en 1992 a donné jour à l'American National Standard for Permanence of Paper for Documents in Libraries and Archives (ANSI/NISO Z39.48-1992). Les prescriptions techniques de la norme ISO 9706: 1994 sont fondées sur celles décrites dans la version révisée de la norme américaine et en sont fort proches. Les deux normes traitent des papiers couchés et non couchés.

Les publications imprimées sur un papier conforme aux prescriptions de la norme ISO 9706: 1994 sont en droit d'utiliser le symbole de la norme. Il s'agit du signe mathématique de l'infini inscrit dans un cercle et suivi du numéro de la norme.

Exemple :



On peut également compléter ou remplacer ce symbole par la formule suivante : "Ce papier répond aux prescriptions de la norme ISO 9706: 1994 - Information et documentation - Papier pour documents - Prescriptions pour la permanence".

Lors de conditions de stockage de longue durée dans les bibliothèques et les archives, on estime que ces papiers pourront résister pendant plusieurs siècles à la consultation et à la reproduction sans jaunir ni se fragiliser. En revanche la majorité des papiers utilisés depuis le milieu du XIXe siècle pour l'impression des livres, des journaux et des documents s'est significativement détériorée en l'espace seulement d'une vie humaine. Signalons également que les papiers permanents sont alcalins plutôt qu'acides et que les papiers alcalins ont en général une durée de vie supérieure à celle des papiers acides mais que les prescriptions complémentaires de permanence ont pour objectif de prolonger encore davantage leur durée de vie. Le carbonate de calcium, utilisé comme tampon, est le critère de permanence parce qu'il empêche l'acidification du papier. On ne peut l'utiliser que si l'encollage est effectué en milieu neutre ou alcalin. Ensuite, reste à différencier les papiers sans acide des papiers permanents que l'on confond et utilise souvent sans discernement. Les papiers permanents contiennent obligatoirement un minimum de 2% de carbonate de calcium et peu ou pas du tout de lignine, ce qui n'est pas le cas des papiers sans acide.

## **Pourquoi utiliser du papier permanent ?**

Pour préserver notre patrimoine documentaire d'une part et d'autre part pour éviter de grever davantage les budgets déjà réduits des bibliothèques et archives du monde entier, qui tentent de sauvegarder les matériaux fragilisés grâce à des traitements de conservation ou par le biais de programmes de remplacement ou de reproduction.

Il est donc de l'intérêt de chacun d'accélérer le mouvement déjà bien lancé dans plusieurs pays en faveur de l'utilisation du papier permanent. Les bénéficiaires en seront (outre les bibliothèques et les archives) :

- les auteurs qui ne verront plus leurs travaux perdus pour la postérité,
- les chercheurs qui veulent pouvoir accéder à l'information,
- les érudits, qui écrivent l'Histoire,
- les éditeurs et les imprimeurs, non seulement pour satisfaire les bibliothèques et leurs autres clients mais aussi par conscience et fierté professionnelle, par intérêt commercial, car plus les bibliothèques dépensent d'argent pour la conservation des ouvrages existants moins il leur en reste pour en acheter de nouveaux,
- les gouvernements, qui ont aussi une responsabilité d'archivage et un intérêt financier direct à réduire au maximum les dépenses liées à la conservation des ouvrages et documents existants,
- les citoyens qui souhaitent sauvegarder ouvrages et documents pour leurs descendants sans être contraints de recourir à de coûteuses techniques de conservation.

## **Le papier permanent est-il plus cher ?**

Non, il ne devrait pas l'être. Le procédé de fabrication du papier alcalin, qui est le point de départ pour la production de papier permanent, est parfaitement compétitif. Ce procédé est plus propre et moins corrosif pour l'usine que le procédé en milieu acide. Les coûts énergétiques sont plus bas. Il faut moins de pâte à papier et la consommation d'eau est également moindre. Ce procédé permet aussi de réduire les coûts liés à la mise en conformité des installations avec les normes antipollution. Dans certains pays (par exemple au Canada), des usines de pâte à papier se sont déjà reconverties dans la production de papier alcalin pour des raisons économiques.

### **Le papier permanent est-il sans danger pour l'environnement ?**

Oui, car en préservant notre patrimoine documentaire par l'utilisation de papier permanent, nous contribuons également à la sauvegarde de la planète. Les bibliothécaires et les archivistes sont favorables à la récupération et au recyclage des vieux papiers aussi bien pour des raisons écologiques qu'économiques. Le papier permanent sans acide a un impact moins négatif sur l'environnement. Les usines fabriquant du papier alcalin sont moins polluantes que les usines fabriquant du papier acide et le papier permanent est recyclable et biodégradable.

### **Pourquoi ne pas utiliser du papier recyclé pour les livres neufs ?**

En règle générale, le papier recyclé ne doit pas être utilisé pour les documents imprimés ayant vocation à être conservés de façon permanente. La pâte recyclée contient souvent un mélange de fibres acides ou impropres. Le papier permanent ou d'archivage doit être fabriqué à partir de fibres neuves traitées chimiquement.

Avec l'augmentation de l'utilisation du papier permanent, une masse croissante de matière recyclée sera disponible pour la fabrication des livres neufs. Mais le papier recyclé n'est pas éternellement réutilisable et a besoin, pour être résistant, d'un apport de fibres vierges. L'objectif est maintenant de continuer à développer la fabrication d'un papier recyclé qui offre aux acheteurs le même choix, la même qualité et le même niveau de permanence que les papiers non recyclés.

### **Le papier permanent est-il facilement disponible ?**

Oui, on en produit dans de nombreux pays, mais ceci est relativement récent. Certains pays (le Canada, la Finlande, la France, l'Allemagne, la Grande-Bretagne par exemple) éditent des listes de fournisseurs de papiers alcalins et permanents, qui satisfont aux normes nationales ; ces listes sont en général disponibles gratuitement auprès des bibliothèques nationales. Deux importants répertoires de fabricants de papiers qui se conforment soit à la norme ANSI/NISO, soit à la norme ISO, sont actuellement disponibles.

- En 1993, la Fondation Européenne pour la Coopération entre Bibliothèques/Groupe de Lausanne entreprit la publication du Répertoire européen des papiers d'édition sans acide et permanents pour aider et encourager les éditeurs européens à imprimer leurs publications sur du papier permanent. La seconde édition (1994) donne les caractéristiques d'une centaine de papiers certifiés permanents, produits par 23 fabricants dans 10 pays ; les détails donnés pour chaque papier concernent le couchage, les teintes, le grammage et la norme à laquelle il se conforme.
- Depuis 1994, Abbey Publications Inc., une association à but non lucratif, sise à Austin

(Texas) publie un annuaire dont le titre est North American Permanent Papers. L'édition de 1995 donne la liste par fabricant et par type de papier de quelque 446 papiers permanents produits par 39 fabricants satisfaisant aux prescriptions de la norme ANSI/NISO Z39.48-1992, avec une mise à jour et l'appréciation des utilisateurs pour chaque papier, ainsi que beaucoup d'autres informations utiles et historiques.

## **Le papier permanent est-il beaucoup utilisé ?**

On dispose actuellement de peu d'informations sur le pourcentage de livres, journaux ou autres documents imprimés ou écrits sur papier permanent. Mais plus la production augmente, plus on en utilise. La première étape pour obtenir des statistiques plus précises serait que les éditeurs indiquent de manière systématique la nature du papier qu'ils utilisent sur les publications elles-mêmes. On pourrait ensuite faire figurer ces informations dans les notices bibliographiques ; les bibliographies nationales, qui gèrent les notices du "catalogage à la source", pourraient établir les statistiques. Ces informations pourraient aussi permettre à chaque bibliothèque de dresser l'inventaire de ses collections en distinguant les documents imprimés sur du papier de longue durée, de ceux qui sont davantage enclins à se détériorer. Les éditeurs et les imprimeurs ne pourront préciser la nature de leur papier que si les fabricants sont eux-mêmes conscients de la conformité de leurs produits à la norme et qu'ils l'indiquent sans ambiguïté sur le produit ou dans sa description.

Pour illustrer la situation actuelle voici deux exemples contradictoires relatifs à l'utilisation du papier permanent.

En 1987, la Bibliothèque nationale de médecine (National Library of Medicine) à Washington a entrepris une campagne en faveur de l'utilisation du papier alcalin ou permanent pour les périodiques biomédicaux dépouillés dans son Index medicus. Avant le début de cette campagne, seuls 108 de ces périodiques étaient imprimés sur du papier sans acide. En 1991, ce chiffre avait atteint 1462, soit 48% de l'ensemble. Dans certains pays, le pourcentage était beaucoup plus élevé. En outre, l'indication qu'ils étaient imprimés sur du papier sans acide figurait sur un quart de ces périodiques.

Par ailleurs, la Fondation européenne pour la coopération entre bibliothèques (European Foundation for Library Cooperation) et la société néerlandaise Swets Zeitlinger ont mené en 1993-94 une étude auprès de quelque 2000 éditeurs de 18 pays européens. Cette étude portait sur l'utilisation du papier permanent et montrait une méconnaissance du problème important que posent les livres imprimés sur du papier friable pour la conservation du patrimoine écrit. Ces éditeurs ne réalisaient pas que le mode de prévention le plus simple consiste à imprimer les nouveaux ouvrages sur papier permanent. Sur les 142 éditeurs des 13 pays qui ont répondu, 68 seulement (pour la plupart des éditeurs scientifiques) ont indiqué qu'ils utilisaient du papier sans acide. Les 74 éditeurs (de 14 pays) ayant indiqué qu'ils n'utilisaient pas de papier sans acide n'étaient même pas au courant de son existence. Il est probable que les 1800 éditeurs n'ayant pas répondu au questionnaire n'utilisent pas de papier sans acide et/ou ne sont pas non plus conscients, soit du problème, soit de la disponibilité du papier permanent sans acide.

## **Les bibliothécaires relèvent le défi**

Depuis la fin des années 50, bibliothécaires et archivistes sont conscients des causes de la détérioration du papier et des moyens pour produire du papier alcalin. Dans les années 60, ils ont

commencé à encourager les éditeurs et autres utilisateurs de papier à rechercher et acheter du papier alcalin et permanent, lequel est devenu rapidement disponible. Un grand progrès a été fait au cours des dix dernières années, en terme de prise de conscience, de disponibilité du papier permanent et de son utilisation réelle, mais beaucoup reste encore à faire. En 1989 et 1991, La Fédération Internationale des Associations de Bibliothécaires et des Bibliothèques (IFLA), qui représente les bibliothèques du monde entier, a adopté des résolutions recommandant la fabrication et l'utilisation partout dans le monde du papier permanent sans acide et l'adhésion à une norme internationale. Peu après la norme ISO a été élaborée et publiée : il serait souhaitable que l'UNESCO incite ses Etats membres à s'y conformer et à la promouvoir.

Fabricants, distributeurs, imprimeurs et éditeurs vous pouvez oeuvrer en commun avec les bibliothécaires et les archivistes pour la sauvegarde de la mémoire culturelle collective de six façons différentes :

1. Sachez si les papiers d'impression ou d'écriture que vous fabriquez sont en conformité avec la norme ISO et indiquez-le sur vos produits.
2. Informez les membres et adhérents de vos associations et syndicats professionnels sur l'importance d'utiliser du papier permanent et incitez-les à utiliser les papiers qui sont conformes à la norme internationale, particulièrement pour les publications de valeur durable.
3. Apposez le symbole ou la mention de permanence, ou les deux, sur toutes les publications conformes à cette norme et faites figurer cette information sur les supports publicitaires et commerciaux, sur les emballages, dans les articles de presse, les catalogues de vente et les notices de catalogage avant publication.
4. Incitez les autorités, à tous les niveaux, à adopter, au moyen de lois ou de décrets, une politique en faveur de l'utilisation du papier permanent dans un but historique ou d'archivage.
5. Rassemblez les statistiques de production du papier alcalin et permanent, publiez-en les résultats et encouragez l'augmentation de la production pour répondre à la demande locale.
6. Soutenez le financement de recherches complémentaires sur les causes de la détérioration du papier et les solutions à apporter ainsi que sur toutes initiatives visant à préserver les collections des bibliothèques et des archives.

La production et l'utilisation massive de papier permanent contribueront à assurer aux générations futures la disponibilité du patrimoine documentaire de l'humanité.

## **Preservación de nuestro patrimonio documental - El caso del papel permanente**

**Atención: fabricantes y distribuidores de papel, imprentas y editoriales**

### **Sabían ustedes que**

- cientos de millones de libros y documentos de bibliotecas y archivos se están destruyendo en sus estantes debido a que desde la década de los cincuenta han sido impresos o escritos

en papeles manufacturados parcialmente con pulpa de madera mecánica y/o aprestados en un medio ácido? y que este papel ácido se torna amarillo, friable y con el tiempo se convierte en polvo?

- los costos de preservación a través de tecnología micrográfica o de disco óptico, digitalización, desacidificación, u otros tratamientos de conservación (ideados para salvar la mayor parte del patrimonio cultural y científico escrito de los últimos 150 años) están más allá de los recursos financieros de incluso las bibliotecas nacionales y de investigación más grandes del mundo?

## **Están Uds. conscientes de que**

- el problema puede detenerse y hacerse finito si, en el futuro, todas las publicaciones de valor perdurable se imprimen en papel permanente libre de ácido?
- el papel permanente libre de ácido no es más costoso que el papel ácido y es ambientalmente benigno?
- los bibliotecólogos y archivistas han estado en campaña a fin de establecer normas para la fabricación de papel permanente y la acción legislativa para hacer que se instrumente su uso, para todas las publicaciones de interés perdurable; pero que ellos todavía necesitan la ayuda de los fabricantes y distribuidores de papel, las imprentas y editoriales?
- todas las personas e instituciones preocupadas por la preservación del patrimonio escrito y la producción de papel en cualquier país tienen ahora una norma común que permite la coordinación de esfuerzos y la adopción de medidas para la promoción del papel permanente?

## **Qué es el papel permanente?**

En pocas palabras es el papel que cumple con las especificaciones de las normas diseñadas para asegurar que éste permanezca estable por largos períodos de tiempo. "Permanente" se refiere a las propiedades químicas y físicas del papel, que incrementan la longevidad pero no evitan el reciclaje. Algunos países (incluyendo Australia, Canadá y Estados Unidos) han elaborado, o están elaborando, sus propias normas para lograr una larga vida en papel permanente, pero una norma universal o de nivel básico emitida por la Organización Internacional para la Normalización (ISO) está ahora disponible.

## **Qué es la Norma Internacional?**

ISO 9706: 1994 - Información y Documentación - Papel para Documentos - Requerimientos para Permanencia (Ginebra: Organización Internacional para la Normalización, marzo 1994).

El Comité ISO (ISO/TC 46/SC10/WG1), encargado en 1988 de la formulación de una norma internacional, tomó como punto de partida la Norma Nacional Estadounidense para las Ciencias de la Información - Permanencia del Papel para Materiales de Biblioteca Impresos (ANSI Z39.48 - 1984), publicada en Nueva York en 1985 por el Instituto Estadounidense de Normas Nacionales. Esta fue revisada en 1992 y quedó como Norma Nacional Estadounidense para la Permanencia del Papel para Publicaciones y Documentos de Bibliotecas y Archivos

(ANSI/NISO Z39.48-1992). Los requerimientos técnicos de ISO 9706: 1994 se basan en los especificados en la edición estadounidense revisada, y son muy similares. Ambos cubren el papel revestido y no revestido.

Las publicaciones en papeles que cumplen las especificaciones ISO 9706: 1994 están facultadas para usar el símbolo que denota el cumplimiento de la norma. Se trata del signo matemático del infinito colocado en un círculo sobre el número de la norma internacional.

### **Ejemplo:**

Si se prefiere, puede usarse un enunciado, o combinarse éste con el símbolo. La frase recomendada es la siguiente: Este papel cumple con los requerimientos de ISO 9706:1994 - Información y Documentación - Papel para Documentos - Requisitos de permanencia.

Se estima que éstos son papeles que, cuando se someten a un largo almacenamiento en bibliotecas y archivos, duran varios cientos de años sin decolorarse o tornarse friables cuando de usan o se copian. En contraste, la mayoría de los papeles que se emplean en libros, periódicos y documentos desde mediados de 1800 se deterioran significativamente en la vida promedio del hombre. Debe notarse que los papeles permanentes son más alcalinos que ácidos, y los papeles alcalinos generalmente tienen una vida más larga que los ácidos, pero los requerimientos adicionales para los papeles permanentes están ideados para proporcionar una vida aun más larga. El carbonato de calcio como relleno es el criterio de permanencia usado debido a que evita que el papel sea ácido. Puede emplearse sólo si el apresto se elabora en un medio neutro o alcalino. Luego de esto, la diferencia entre los papeles permanentes y libres de ácido debería determinarse, debido a que a menudo se mezclan y se usan como si fueran lo mismo. Las principales diferencias son la presencia de por lo menos 2% de carbonato de calcio y la ausencia o una mínima cantidad de lignina. Los papeles permanentes tienen que cumplir estos requisitos, mientras que los papeles libres de ácido no.

### **Por qué usar el papel permanente?**

Para preservar nuestro patrimonio documental y al mismo tiempo evitar un mayor agotamiento de los limitados presupuestos de las bibliotecas y archivos del mundo entero, que tratan de salvar materiales friables a través de tratamientos de conservación, reemplazo o reformateo.

Por lo tanto, es del interés de todo el mundo acelerar el movimiento, ya bien adelantado en muchos países, hacia el uso del papel permanente. Los beneficiarios (además de las bibliotecas y archivos) son:

- autores, quienes no verán sus obras perderse en la historia,
- investigadores, quienes desean tener acceso a la información,
- académicos, quienes escriben la historia,
- editoriales e imprentas, no sólo para complacer a las bibliotecas y a otros clientes, sino también como profesionales que se enorgullecen de su trabajo. Además, mientras más se gaste en preservación de las obras existentes, menor es la posibilidad de disponer de fondos para la compra de nuevas publicaciones,
- gobiernos, que también tienen una responsabilidad en cuanto al archivo de información, así como el interés monetario directo en minimizar los gastos de preservación de las

- publicaciones y documentos existentes,
- ciudadanos, quienes desean salvar publicaciones y documentos para sus descendientes y no verse forzados a buscar costosos métodos técnicos de preservación.

## **Es el papel permanente más costoso?**

No, no debería serlo. El proceso de fabricación de papel alcalino, que es el punto inicial para la producción de papel permanente, es completamente competitivo. El proceso es más limpio y menos corrosivo para la planta que el de base ácida. Los costos de energía son más bajos. Se requiere menos fibra de pulpa como relleno y se consume menos agua. El proceso puede también resultar en la reducción del costo de adaptación a las normas anticontaminación. En algunos países (Canadá, por ejemplo), una serie de molinos ya se han convertido para producir papel alcalino por razones económicas.

## **Es el papel permanente ambientalmente benigno?**

Sí, mientras preservamos nuestro patrimonio publicado a través del uso del papel permanente, podemos también promocionar la preservación de la Tierra. Los bibliotecarios y archivistas reciben con agrado el aprovechamiento y el reciclaje del papel de desecho por razones tanto ambientales como económicas. El papel permanente libre de ácido tiene un efecto adverso mínimo al ambiente. Las fábricas de papel alcalino producen menos contaminación que los molinos de papel ácido y el papel permanente es reciclable y biodegradable. Por qué no usar papel reciclado para libros nuevos?

Como regla general, el papel reciclado no debería usarse para materiales impresos que han de retenerse permanentemente. La pulpa reciclada a menudo contiene una mezcla de fibras ácidas y de otras fibras no adecuadas. El papel, permanente o de archivo, debe elaborarse con fibras vírgenes tratadas químicamente.

Al aumentar el uso del papel permanente, se puede disponer de mayor oferta de material reciclado para la manufactura de nuevos libros. Pero el papel reciclado no puede usarse infinitamente y necesita un componente de fibra virgen para que le proporcione fortaleza. El objetivo ahora es continuar desarrollando y fabricando papeles reciclados que ofrezcan a los compradores la misma opción, calidad y niveles de permanencia que los papeles no reciclados.

## **Está disponible ya el papel permanente?**

Sí, y proviene de muchos países, aunque es un acontecimiento bastante reciente. Algunos países (por ejemplo Canadá, Finlandia, Francia, Alemania, Gran Bretaña) publican listas de los proveedores de papeles alcalinos y permanentes que cumplen con las normas nacionales, estas listas usualmente están disponibles gratis en las bibliotecas nacionales. Ya están disponibles dos catálogos muy importantes de papeles que según sus fabricantes cumplen con las normas ANSI/NISO, la ISO, o ambas.

- En 1993, la Fundación Europea para la Cooperación de Bibliotecas/Grupo de Lausanne comenzó a publicar el European Directory of Acid-Free and Permanent Book Paper (Directorio Europeo de Papel Permanente y Libre de Ácido para Libro), para ayudar y estimular a los editores a imprimir sus publicaciones en papel permanente. La segunda edición (1994) enumera las características de unos cien papeles permanentes certificados

para libro producidos por 23 fabricantes en 10 países. Los detalles proporcionados para cada papel incluyen revestimiento, colores, peso y la norma a la cual se adaptan.

- Desde 1994, la organización sin fines de lucro, Abbey Publications, Inc. de Austin, Texas, ha estado publicando un directorio anual titulado North American Permanent Papers (Papeles Permanentes de Norteamérica). La edición de 1995 enumera, por nombre de compañía y tipo de papel, unos 446 papeles permanentes elaborados por 39 fabricantes que cumplen con las normas ANSI/NISO Z39.48-1992, con contenido de material reciclado y posterior al consumo para cada uno, al igual que otras informaciones históricas y útiles.

## **Cuánto Papel Permanente se usa actualmente?**

Hasta el presente, los datos disponibles sobre la proporción de libros, periódicos y documentos impresos o escritos en papel permanente son limitados. Pero, con la gran cantidad de papel permanente para imprenta y escritura que se está produciendo, el uso real debe ir en aumento. El primer paso hacia mejores datos estadísticos sería que los editores rutinariamente y sin excepción señalaran en las publicaciones mismas la naturaleza del papel. Esto entonces podría introducirse en los registros bibliográficos y las agencias nacionales que administran los programas de "catalogación en publicación" podrían compilar estadísticas. Estos datos también permitirían que las bibliotecas individuales prepararan inventarios, identificando los ítems de sus colecciones elaborados en papel de larga vida y distinguiéndolos de los soportes más vulnerables al deterioro. Sin embargo, las editoriales e imprentas pueden saber la naturaleza del papel, si los fabricantes están conscientes de cuáles de sus productos cumplen los requisitos de la norma y lo indican sin ambigüedad ya sea en el producto o en su descripción.

No obstante, tenemos efectivamente dos visiones del presente estatus del uso real en las publicaciones, una estimulante y la otra mucho menos que alentadora.

En 1987, la Biblioteca Nacional de Medicina de Washington emprendió una campaña para estimular el uso de papeles permanentes o alcalinos en los periódicos biomédicos incluidos en su Index Medicus. Antes de iniciarse este programa, sólo 108 de estas publicaciones se imprimían en papel libre de ácido. Para 1991, el número había aumentado a 1.462, es decir el 48% del total. Para algunos países, el porcentaje fue mucho mayor. Además, un cuarto de estos periódicos llevaban una nota que indicaba que el papel usado era libre de ácido.

Por otro lado, un estudio de 1993/1994 sobre el uso del papel permanente para libro por parte de unas 2.000 editoriales europeas en 18 países, realizado por la Fundación Europea para la Cooperación de Bibliotecas (EFLC), con la asistencia de la compañía holandesa Swets & Zeitlinger, muestra una falta de conciencia del grave problema de libros friables para la preservación del patrimonio cultural escrito en sus países y de la existencia del papel permanente para imprimir libros nuevos como la manera más simple de prevención en el futuro. Sólo 68 editoriales (en su mayoría científicas) de un grupo de 142 que respondieron en 13 países indicaron que estaban usando papel no ácido. Algunas de las 74 editoriales de 14 países que indicaron que no usaban papel libre de ácido no conocían su disponibilidad. Se presume que las 1800 editoriales que no respondieron no utilizan papel libre de ácido y/o no están conscientes ya sea del problema o de la disponibilidad del papel permanente libre de ácido.

## **Los bibliotecólogos asumen el reto**



Desde finales de 1950, los bibliotecólogos y archivistas han tenido presente las causas del deterioro del papel y los medios de producir papel alcalino. En los años 60, comenzaron a estimular a las editoriales y otros usuarios de papel para que encontraran y compraran papel alcalino y permanente, cuya disponibilidad ha ido en aumento. Se ha logrado un gran progreso en los últimos diez años, en cuanto a la toma de conciencia, la disponibilidad del papel permanente y su uso real, pero queda mucho por hacer. En 1989 y 1991, la Federación Internacional de Asociaciones de Bibliotecarios y Bibliotecas (IFLA), representante de bibliotecas del mundo entero, adoptó resoluciones que abogan por la fabricación y uso internacional del papel permanente libre de ácido, así como la adopción de una norma internacional. Se espera que la UNESCO inste a sus gobiernos miembros a promocionar el cumplimiento de la norma ISO subsecuentemente creada y promulgada.

Existen seis maneras en que los fabricantes y distribuidores de papel, imprentas y editoriales pueden ayudar a las bibliotecas y archivos en una alianza efectiva para la salvaguarda de nuestra memoria cultural colectiva:

1. Estar consciente del cumplimiento de la norma ISO en la fabricación de papeles de imprenta y escritura, y señalar este cumplimiento en sus productos.
2. Educar a los miembros y afiliados de las asociaciones profesionales y comerciales sobre la importancia del uso del papel permanente, instarlos a respaldar el uso de papeles que cumplan con la norma internacional, como asunto de alta prioridad para todas las publicaciones de valor perdurable.
3. Mostrar el símbolo, enunciado, o ambos, en todas las publicaciones que cumplan con esta norma e incluir la información en la publicidad, empaque, promoción, revistas, catálogos de venta, y participación en programas de catalogación en publicación.
4. Hacer presión a todos los niveles del gobierno para que se adopte una política de uso de papel permanente para fines históricos y de archivo, ya sea por legislación o por mandato ejecutivo.
5. Compilar estadísticas sobre la producción de papel permanente y alcalino, hacer públicos los hallazgos e instar al incremento de la producción para satisfacer la demanda local.
6. Apoyar el financiamiento de una investigación continua sobre las causas y las soluciones del deterioro del papel, así como de mayores iniciativas para preservar las colecciones en bibliotecas y archivos.

La producción en masa y el uso del papel permanente ayudará a garantizar que el patrimonio documental del mundo esté disponible para su uso y disfrute y para el avance de las generaciones futuras.

## Encouraging the Use of Permanent Paper

**Next October the National Library of Canada will present a resolution on the use of permanent paper at the General Conference of UNESCO. It aims to induce Member states to print official publications on permanent paper, thus sensitizing governments with the issue of acidic papers. The following is the text of this resolution.**

## **The General Conference,**

Recalling that the preservation of and access to cultural heritage is one of UNESCO's major concerns,

Considering that, with respect to the preservation of tangible cultural heritage, UNESCO has initiated several international Conventions and Recommendations, including the Convention for the Protection of the World Cultural and Natural Heritage, and initiated or participated in several programmes such as the "Memory of the World" and "Blue Shield" initiatives,

Considering that many of the world's cultural, educational and scientific resources in written form on paper are endangered because the acid papers which have been in common use for the last 150 years disintegrate in a matter of decades, Considering that permanent paper with a life of hundreds of years is increasingly available at comparable prices,

Considering that major and costly efforts are required to salvage the most important existing publications and documents, and that these efforts could be avoided by the use of permanent paper,

Considering that the International Federation of Library Associations and Institutions (IFLA), in resolutions adopted by its Council in 1989 and 1991, recommends that UNESCO and other UN agencies use permanent paper in their publications and documents and that UNESCO survey the use of such papers in its Member States,

Considering that the International Council of Archives (ICA) at its 12th International Congress held in Montreal in 1992 recommended that its members encourage their governments to adopt policies promoting the use of permanent paper,

Considering that this was discussed by the PGI Intergovernmental Council and its Bureau in 1993 and 1994,

Considering that the International Publishers Association (IPA) in 1989 recommended the use of permanent paper by publishers in its affiliated national publishing associations,

Considering that the International Organization for Standardization (ISO) through its Technical Committee 46 (Information and Documentation) has adopted International Standard ISO 9706:1994 (Information and Documentation-Paper for Documents-Requirements for permanence),

Considering that, in a number of countries, laws and regulations have been adopted requiring the use of permanent paper in some or all official publications and documents,

Commends the IFLA, the ICA, the International Publishers Associations (IPA) and the International Organization for Standardization (ISO) for their efforts to promote the use of permanent paper,

Recommends that the Member States of UNESCO, by legislation, regulation, encouragement and example, promote the use and identification of permanent paper in their respective territories for publications and documents to be retained for historical or

information purposes;

and invites the Director General of UNESCO to ensure that UNESCO documents and publications are printed on permanent paper and carry a statement or logo to that effect; and arrange for the collection of data through the UNESCO statistical surveys on the extent to which permanent paper is being used worldwide.

## **Incitation à L'Utilisation du Papier Permanent**

**La Bibliothèque Nationale du Canada présentera à la Conférence Générale de l'UNESCO en octobre prochain une résolution pour inciter les Etats membres à imprimer leurs publications officielles sur papier permanent et ainsi sensibiliser les pouvoirs publics au problème des papiers acides. Nous vous présentons le texte de cette résolution.**

### **La Conférence générale,**

Rappelant que la conservation du patrimoine culturel et l'accès à ce patrimoine constituent l'une des principales préoccupations de l'UNESCO,

Considérant que l'UNESCO a initié plusieurs instruments normatifs internationaux, conventions et recommandations concernant la conservation des biens culturels, dont la convention pour la protection du Patrimoine culturel et naturel mondial, et considérant qu'elle a été l'initiatrice de, ou qu'elle participe à plusieurs programmes comme "Mémoire du Monde" ou "Bouclier Bleu",

Considérant que les papiers acides utilisés au cours des 150 dernières années se détériorent en l'espace de quelques décennies et menacent de disparition la plupart des ressources culturelles, éducatives et scientifiques créées pendant cette période,

Considérant que le papier permanent dont l'espérance de vie est de plusieurs centaines d'années et dont la disponibilité ne cesse de s'accroître sur le marché à des prix concurrentiels,

Considérant que pour sauvegarder ce qui peut être sauvé parmi les documents et publications les plus importants, des efforts considérables et coûteux sont nécessaires, efforts et dépenses qui pourraient être évités par l'utilisation du papier permanent,

Considérant que le Conseil de l'IFLA a adopté en 1989 et 1991 des résolutions recommandant à l'UNESCO et aux autres organismes de l'ONU d'imprimer leurs publications et documents sur du papier permanent et recommandant à l'UNESCO de faire une enquête auprès des Etats membres sur l'utilisation de ce type de papier,

Considérant que le Conseil International des Archives, lors de son XIIe congrès international tenu à Montréal en 1992, a recommandé à tous ses membres d'encourager leurs gouvernements à adopter des politiques favorisant l'utilisation du papier permanent,

Considérant que la question a été discutée par le Conseil intergouvernemental du PGI et son bureau en 1993 et 1994, Considérant que l'Union Internationale des Editeurs (UIE) a recommandé en 1989 l'utilisation du papier permanent aux éditeurs de ses associations membres,

Considérant que l'Organisation Internationale de Normalisation (ISO), par l'entremise de son Comité technique 46 (Information et documentation), a adopté la norme internationale ISO 9706:1994 (Information et documentation - Papier pour documents - Prescriptions pour la permanence),

Considérant qu'un certain nombre de pays ont adopté des lois ou des réglementations exigeant l'utilisation de papier permanent pour l'impression d'une partie ou de la totalité de leurs publications et documents officiels, Félicite l'IFLA, le CIA, l'Union Internationale des Editeurs et l'Organisation Internationale de Normalisation pour leurs efforts en faveur de la promotion de l'utilisation du papier permanent.

Recommande que les Etats membres de l'UNESCO s'engagent à promouvoir l'utilisation et l'identification du papier permanent dans leurs pays respectifs pour les publications et documents conservés à des fins historiques ou d'information, et ce par le truchement de lois, de réglementations et d'encouragements, et invite le Directeur général de l'UNESCO à s'assurer que les documents et publications de l'UNESCO soient imprimés sur du papier permanent et que la permanence du papier soit certifiée par une déclaration ou un logo, et à s'assurer que des données soient recueillies par le biais d'enquêtes statistiques de l'UNESCO sur l'utilisation du papier permanent à l'échelle mondiale.

## Preservation Environment in Library Stacks and Anti-Disaster Measures

**This paper should appeal to any librarians concerned with preservation in Asia and most particularly in Japan. Experiments made before the construction of the National Diet Library in 1986, to best protect documents, are described. Traditional techniques have been adapted to the newest materials. Here is an example of successful cooperation between library staff, scientists and architects.**

The climate in Asia varies according to three zones: temperate, tropical and desert.

Japan, Korea and China are located in the temperate zone where the average precipitation is 250-550 mm in winter, 1.000 mm in summer (500 mm in China). Moreover, Korea and Japan are humid in summer because of the very humid seasonal south wind and have low levels of temperature and humidity in winter because of a low northern wind.

India and Vietnam suffer from a tropical climate: 2.000 mm in summer and 250-550 mm in winter. Temperatures rise up to 30°C. In Vietnam floods and storms occur regularly in summer.

Mongolia lies in the desert zone and receives very little rain (below 50 mm throughout the year). A continental sand-laden wind blows continuously and the average temperature is 15°C.

This range of variations entails different preservation methods. While in Korea and Vietnam, cultural properties are mainly made of paper-based works of art, excellent for moisture absorption and desorption, in Mongolia, documents are inscribed on stones and jewels. Keeping such characteristics in mind, it is important to take the most appropriate measures to preserve each type of cultural property in the future, thanks to global communication.

## The Environment in Underground Stacks

It is well known that wall paintings or tomb furnishings kept in tombs have been preserved in good repair. From this we assumed that the environment in ancient tombs was ideal for preservation. According to a five-year survey on annual temperature difference, which I conducted at the Torazuka old tomb (a) in Ibaraki Prefecture (north-east of Tokyo), the temperature difference was very small throughout the year: while the average highest temperature was 30°C and the lowest temperature was 5°C in the open air, in the tomb, the average highest temperature was 17°C and the lowest 15°C.

Relative humidity was always around 100% in the tomb. This showed that temperature and humidity changed little in the tomb, while they changed dramatically in the open air.

However, the fact that relative humidity in the tomb was stabilized at 100% showed how humid the soil in Japan was. In fact, underground stacks have always suffered from humidity and mold.

So before the underground stacks of the National Diet Library were built, much research and discussion was carried out. A special waterproof system was developed: first, a concrete wall was built over the soil. It was sprayed with a mortar gun and smoothed with trowels. Then it was covered with primer. A waterproof asphalt sheet, made of non-woven fabric for civil engineering use, was used for lining.

Rubberized asphalt was sprayed over the sheeting. This completely blocked out humidity from the soil. Over this base, concrete was cast and the building frame was made. Inside the building frame, specially manufactured board containing thermal insulating and moisture prevention materials were attached. Stacks for rare and old materials are made of wood, which absorbs and desorbs moisture.

As seen in Chart 1, stacks have eight floors underground and four floors above. The first floor of the building is waterproofed efficiently so as to prevent water released from the fire extinguishing system from pouring down to the ground floor. As stacks are located deep in the ground, soil shuts out air from the outside.

The temperature is kept at 22°C± 2°C, and humidity at 55% ± 5%. If nobody enters the stacks, the temperature difference during daytime is 0.7°C, the humidity difference is 0.8%. The stacks for rare and old materials are equipped with a separate air conditioning system in order to blow fresh air into the stacks, which saves energy.

The atrium was installed to allow sunlight to flow down to the eighth floor below. It also helps reduce changes of temperature and humidity within the stacks, as the thick air layer shut off from the open air by the windows on the second floor, acts as an effective heat insulating layer.

## **Fire Prevention**

The underground stacks of the National Diet Library are equipped with smoke detectors, which in case of fire, inform the central control room automatically, the Disaster Prevention Centre of the NDL, and then the fire station. Stacks are also equipped with emergency broadcasting equipment to give evacuation orders to staff.

Halon gas is used for fire extinction. Stacks are arranged so as to avoid the accidental exposure of staff to gas. They are divided into two areas. In case of emergency, central iron doors shut down automatically. Elevators work on an emergency electricity supply. Within the glass

window of the atrium, an automatic smoke protection shutter has been installed. There are three entrances/exits between the closed stacks and the atrium.

The second underground floor and those below have earthquake-resistant walls. Floors are resistant not only to earthquakes but also to external earth pressure. The heads of the stacks are locked into place by square piping in order to prevent them from falling over.

## **Above-ground Stacks: Traditional Wooden Construction**

Contact with the open air makes it very difficult to preserve materials in the stacks above ground. The greatest cause of deterioration of old Japanese documents and books is the phenomenon of “mure”.

“Mure” is a climatic condition that arises from a combination of high temperature, high humidity and lack of air circulation. Old documents and books in Japan suffer from heavy deterioration between June and the end of September, namely from the rainy season to the typhoon season.

Our predecessors invented unique and excellent construction methods such as gable roofs, traditional soil walls and raised-floors, to prevent “mure” and dew condensation. In Kyoto and Nara, constructions are made of wood as shown in Chart 2. Gable roofs keep off sunlight.

“Ranma”, an openwork transom above the sliding partitions between two rooms, prevents “mure”, because warmed air moves through the openings.

Long eaves give shade to the walls and protect them from the rain. In order to avoid damp, the floor is raised. Under the floor ample space is created to prevent “mure” and decay.

## **Gable Roofs Protect the Surface of Walls**

Also characteristic of Japanese constructions is the soil wall, traditionally called “shin-kabe”, which means “heart wall” or “central wall”. This wall absorbs and expels air moisture.

Wooden pillars and lintels are at ground level and hold soil walls. Wood and soil are materials which absorb and desorb moisture as seen in Chart 5 (p. 24), while kraft paper, diatomaceous earth (b) and China clay hardly absorb and expel moisture. If walls had been made of such materials in Japan, dew condensation would have been caused.

Our predecessors must have invented construction methods using wood and soil to live comfortably, although indoor humidity reaches 60% to 65% even when it rains and when outdoor relative humidity rises to 100%. Thus it is important for preservation, to keep the indoor humidity level as low as possible.

Gable roofs can be compared to hats. Eaves protect the surface of walls. The basics of preservation are to take care of the heart of the house. Based on these ideas, modern construction methods have invented new materials such as heat insulators.

## **Description of the Imperial (c) Household Agency**

The building of the Imperial Household Agency has one storey below ground and four stories above ground where precious documents of the Archives and Mausolea Department (d) are

stored. It stands on a small hill with an adequate drainage system. No air conditioning is needed but only natural ventilation.

Roofs are gable-shaped, thermal insulating materials have been used for the ceiling in the attic, walls have been made up of heat insulators and air layers, and porcelain tiles have been used for the external wall. Interior walls are made of Japanese cedar which tempers humidity. The building has windows on its eastern and western walls, and balconies on its northern extremities so as to allow the air to flow readily through the storage rooms. In case of disasters, the eaves and disaster protection shutters of balconies and windows work automatically.

This building is excellent for maintaining temperature. The annual minimum temperature on each floor is 6.5-7.0°C, when it is -1,7°C outside. The differences of temperature and humidity between daily maximum and minimum on every floor are very small, less than one tenth of those in the open air.

Gable roofs are shallow and do not have large attics. The fourth floor temperature is 28°C, while it is 23°C on the first, second and third floors. This is because the attic does not have a sufficient air layer. However, the bulk of documents will increase so rapidly over the next few years that attics are considered to be a waste of space. In modern constructions, thermal insulating materials are used, and have the same function as attics. But if thermal insulating materials are used, as shown in chart 3A, they are useless as they have no layers. Instead thermal insulating materials should be installed in the ceilings, as shown in chart 3B.

Ventilation openings should be installed in gable roofs in order to avoid the “mure” phenomenon. As mentioned before, “mure” occurs when artefacts are stored in hot and humid environments that are not ventilated. A gentle flow of air helps prevent “mure”, as a gentle wind is valuable for the preservation of old documents and books. However, when the temperature is low, no wind is necessary.

The effectiveness of the thermal insulating materials attached to the fourth floor ceiling of the storehouse of the Imperial Household Agency were studied. The temperature and humidity were surveyed by a thermo-hygrometer in the ceiling, under the heat insulating materials, and on the fourth floor.

The survey was conducted from July to October when “mure” occurs frequently. The temperature under the heat insulating materials was low, while the temperature in the attic was very high. The gable roof was an excellent invention by our predecessors, but the idea of thermal insulating materials using scientific technology is also commendable and makes it possible to use the fourth floor effectively.

The ideal prevention measure against “mure” is fresh air ventilation with temperature and humidity a few degrees lower than in storage areas. Windows should not be opened from February to May when the outside temperature is much lower. In the rainy season when temperatures are over 25°C, ventilation should not be operated and air conditioning should be used instead, or a large ceiling fan should be turned slowly in the storage area.

## **Measures against Particulates and Exhaust Gases**

Ventilation is necessary in the “mure” season from June to September. But when windows are opened, sunlight also gets in together with dust filled with exhaust gas. A window panel was

invented to eliminate particulates, as seen in Chart 4. The panel has a compound structure: nylon filters are attached to both outer sides of the panel to eliminate particulates containing exhaust gas. Inside the nylon filters are micro filters which eliminate bacteria and mold spores. The innermost part consists of honey comb papers (5-10 cm thick), which reduce air velocity and control humidity. The panel, named the “window panel” is mounted in the window. After a month, nylon filters are almost black and inside filters are dark too, which shows that contaminants cannot be completely eliminated. Nylon filters were examined through an electron microscope and certain kinds of tars were observed. It is thus probable that exhaust gas had entered the storage area in the form of ultrafine particulates.

Ideally the panel should absorb all contaminants, which is not the present case. Its design needs to be improved in the future.

## **Ideal Preservation Box**

Under harsh climatic conditions such as in Japan, old documents and books are stored in boxes. In order to avoid moisture, traditional boxes have legs. For instance, at the Shosoin Treasure House in Nara, double boxes are used to store this precious material. Old documents are covered with “washi”, traditional Japanese paper or cloth wrappings, and stored in boxes. The materials the boxes are made of vary according to countries in Asia: in Japan, “paulownia” (a Japanese tree), Japanese cedar and Japanese cypress are used to prevent “mure”, because they can absorb and expel moisture humidity. On the other hand, in China, where humidity is lower than in Japan, solid wood such as rosewood and ebony, is used.

Were preservation boxes to be kept within other boxes made of thermal insulating materials, changes in temperature inside the boxes would become minimal. The same phenomenon happens in ancient tombs where artefacts are preserved from the open air. In other Asian countries, the use of preservation boxes is recommended.

## **Effects of Preservation Boxes**

Changes in temperature and relative humidity inside the preservation boxes were measured. After accustoming empty boxes to the stacks environment for a while, open air was introduced into stacks for an hour. The air temperature changed by 2,5°C while the temperature within the boxes changed by 0,6°C. The humidity level in the open air changed by 13 % while that inside preservation boxes changed only by 1,2%. Results show that temperature and humidity hardly change within preservation boxes. If double preservation boxes were used, changes would be even less.

## **Contamination of Resin (e)**

In the past, wooden materials for preservation boxes were dried naturally and sufficiently until no resin was emitted. Nowadays, because wooden materials are dried artificially, the resin remains. When such materials containing resin are used for boxes or stack walls, resin is emitted. You may have the same experience in your house. As long as rooms in modern houses are tightly shut, resin cannot be emitted into the open air and remains within the room. The monomer ingredient of resin is attached to pillars. But when you smell a woody fragrance, it means that resin is in the air. Today both stacks and houses are airtight, which results in resin damaging walls.



If preservation boxes are stored before the wood smell appears, resin becomes attached to the surface of the boxes and forms brown spots, not to be confused with resin. On the contrary, resin becomes the nutrient of mold whenever humidity rises. Mold is likely to grow where resin lies. Even though preservation boxes are thought to be effective, new wooden boxes themselves emit resin which sticks to the documents. As resin is acid, paper will turn brittle, just as is the case with acid paper. This is the reason why environment monitoring strips should be used.

## **Environment Monitoring Strips**

As litmus paper tests the quality of water, environment monitoring strips are used to test the air. When the air is almost normal a slight green colour appears, which turns yellow when there is acidity in the air, and blue when there is alkalinity. Strips also change colour when solvents are in the atmosphere. Books should not be preserved in stacks or boxes before a normal atmosphere is confirmed.

## **Cleaning Liquid**

Particulates enter stacks or preservation boxes. Adhering particulates cause mold or deteriorate paper. Eliminating dust is a basic requirement for preserving cultural properties. However when cleaning is done with water, the humidity level increases. Documents should be stored in boxes after these are dried up. We use a cleaning liquid mainly made of polyvalent alcohol, such as propylene glycol. This cleaning liquid is still under development.

In the experiments done with paulownia boxes, relative humidity within boxes was 62%. It rose to 84% when boxes were wiped with cloths containing water but when the cleaning liquid was used, relative humidity only rose to 65%. This liquid cannot sterilize bacteria but does eliminate them. If boxes are tightly closed, bacteria can be eliminated for about 10 years. Even if temperatures rise to around 40°C, mold does not grow. This liquid cleaning should be very effective in the post-treatment of floods in Vietnam and in eliminating the effects of sandstorms in Mongolia. It also protects musty materials from mold. The liquid has to be sprayed and covered with a sheet but it is even better if documents are wiped before being stored.

However this liquid can dissolve oil paint, so caution should be exercised.

## **Methods against Disasters**

Wooden boxes burn easily, so we conceived boxes that could have the same function as storehouses to protect materials against fire. However boxes made of general noncombustible materials cannot be closed tightly, so we created boxes made of calcium silicate, which has characteristics in common with wood. These boxes can be given various shapes and can absorb and expel moisture. They can be shut tightly and are strong enough to withstand being crushed by forces from above.

A fire proof experiment was carried out by putting the boxes in a furnace. The temperature was raised to 1,000°C within eight minutes and then left at this temperature for about 30 minutes. The temperature within the boxes rose to about 130°C. Usually paper changes colour slightly at 140°C and turns brown at 180°C and, although we did not notice anything, some changes in the paper occurred at 130°C. The preservation boxes are not able to resist fire completely but are considered one of the best means of preserving cultural properties against fire. The ideal box will

be one which can keep an inside temperature of 40°C and relative humidity from 60% to 65%, even if left at 1,000°C for one hour. If such boxes existed, staff could find cultural properties safe even after returning from evacuation. In the future, advanced thermal insulating materials which have been developed in space shuttle research, will be used to create ideal preservation boxes.

From now on, not only papers but also films, magnetic tapes, disks and images will be the most important carriers in libraries. We have to prepare facilities which will have the proper function of preserving them. So far in Japan we have not elaborated standards for the preservation of new media and we would like to cooperate.

Last but not least, as a result of the cooperation between staff members of the NDL, architects and staff of the Archives and Mausolea Department and architects, excellent storage places have been created. The important thing is the opinion of staff members. I hope that preservation staff and architects will work hand in hand to cooperate and develop new preservation methods.

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Note from the Editor: this paper was presented in November 1996 at the symposium organised by the PAC Regional Centre in Tokyo to celebrate its 10th anniversary.

Toshiko Kenjo

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(a) The Torazuka old tomb is supposed to have been constructed in the middle of the 7th century. It is famous for various wall paintings and many kinds of iron work such as swords and arrowheads.

(b) “Diatomaceous earth” is a porous rock made of fossilized frustules used in filters, insulators, abrasives, etc.

(c) The Imperial Household Agency is in the Imperial Palace in the centre of Tokyo. The Agency is under the control of the Prime Minister and is in charge of the affairs of the State as far as the Imperial House and the Emperor’s acts are concerned. It has the custody of the Imperial Seal and the Seal of the State.

(d) The Archives and Mausolea Department is in charge of the preparation of the entry of the Imperial Genealogical Book and its custody, the caretaking of the Imperial Mausolea and Tombs, the caretaking of books and records, the compilation and custody of official documents and all that regards “Shosoin” (the Imperial Repository).

(e) “Resin” is an adhesive non flammable polymer, usually insoluble in water but soluble in organic solvents, such as alcohol.

## **Book Review**

### **Memory of the World: Lost Memory - Libraries and Archives Destroyed in the Twentieth Century.**

*Prepared for UNESCO by Hans van der Hoeven on behalf of IFLA and Joan van Albada on behalf of ICA. - Paris : UNESCO, 1996.-ii,76 p. (CII-96/WS/1)*

In the framework of the “Memory of the World” Programme, UNESCO has contracted IFLA and ICA (International Council on Archives) to prepare a list of library collections and archive holdings which have suffered from irreparable damage in the 20th Century, and a list of current activities aimed at the safeguarding of the documentary heritage.

Part I, by Hans van der Hoeven from the Koninklijke Bibliotheek in The Hague draws up a list of libraries destroyed since 1900. It is far from being exhaustive as it was obtained by desk research. Nevertheless it gives a glimpse of the various causes of destruction in more than 100 countries.

Part II, by Joan van Albada, from the Archives in Dordrecht, Netherlands, explains how a survey was circulated among 6250 archive holdings in 105 countries. The author always endeavours to be critical and below each table attempts to balance out its statistical representation, the continents being always over (Europe) or under represented (North America or the Pacific). He also draws a conclusion after analysing each of the tables. For instance, he assumes that man is more destructive than nature, and goes on to assert that among all natural causes of damage, temperature coupled with humidity is way above all others. He declares that preventive conservation should be the rule and priorities must be established in order to minimize costs. He insists on the necessity of national, regional and international cooperation. Tables are particularly clear and easy to read.

Part III is made up of appendices: an abbreviated version of the questionnaire, a list of repositories reporting losses and percentages of damage reported.

### **Memory of the World: A Survey of Current Library Preservation Activities.**

*Prepared for UNESCO on behalf Paris : UNESCO, 1996. v, 59 p. (CII-96/WS-7)*

In 1994 a large survey was launched through the IFLA-PAC network to identify the level and amount of preservation action and training in major libraries throughout the world. The survey aimed to obtain specific information concerning the holdings of significant documentary heritage. A total of 916 questionnaires was distributed to at least 155 countries. Only 155 libraries from 58 countries answered, 36% of these were national libraries.

The document contains a large number of tables which may seem redundant at first sight, but percentages are always discussed and anomalies explained. Results are given according to each region (Africa, Australasia, Central America, Europe, North America, the Pacific, and SE Asia).

The questionnaire is published in an annex, with the list of responding institutions, region by region and by library type. There is also a table on the condition of nationally and internationally significant material.

Jan Lyall, the Director of the PAC Regional Centre in Canberra, who supervised the survey, regrets the unevenness of the responses (North America only sent 6 !) and explains that additional data from the Middle East, South America and Asia must be collected before any sensible conclusions can be drawn. Nevertheless the survey has demonstrated a strong interest in “Memory of the World”.

These two documents were originally published in English. They are also available in French and orders should be sent to :

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UNESCO  
*1 rue Miollis*  
*75732 Paris, FRANCE*  
*Fax : 33 (0)1 45 68 55 82*

Marie-Thérèse Varlamoff  
PAC Director

## **PAC News**

### **Excellent Public Response to Library of Congress Second Workshop**

- “Very useful, well organised, great free event”
- “Excellent presentations with practical information”
- “Staff courteous, knowledgeable and willing to share information”
- “Would like to have this event repeated in the future”
- “So much preservation information in one room!”

These are some of the comments from the over 500 attendees to the second Preservation Awareness Workshop, held at the Library of Congress on April 15th, 1997. The majority of respondents (95%) expressed their enthusiasm for this event co-sponsored by the Library's Centre for the Book and the Preservation Directorate. They told the organisers, in no uncertain terms, that the Library was filling an important gap in information on preservation and conservation, at a very personal level.

John Cole, Director, Centre for the Book, Diane Nester Kresh, Director for Preservation and Acting Director for Public Service Collections, and, Amparo R. de Torres, Special Projects Officer and Coordinator of the event considered it a resounding success. It was truly a team effort in which over 100 Library of Congress staff, allied organisations and vendors of preservation products, worked together to make it happen.

The main goal of this workshop was to reach the general public in the Washington Metropolitan area and the staff of the Library of Congress, with basic preservation information: how to take care of their documents, books, photographs and “golden oldies” sound recordings, at home. They learned that to save their precious collections for their grandchildren they should not store things in the attic (too hot), nor in the basement (risk of flood). They were also taught how to store LP's and CDs and what types of photographic albums were best.

Approximately two thirds of those attending consisted of the general public while the rest were library staff. A special effort was made this year to contact local genealogical and historical societies, local library groups personally and several notices appeared in the local press, and were broadcast during the weeks previous to the event. In addition announcements appeared in the Internet LC's Home Page and the WWW.

Demonstrations by staff included solutions to the housing of collections, collections care activities, preservation research projects, gold tooling, book sewing, and photoduplication, among others. There were five slide presentations by specialists from the Preservation Directorate and the Motion Picture, Broadcasting and Recorded Sound Division and the University of Delaware on the «Care, Handling and Storage» of books, papers, photographs and

negatives, motion picture films and sound recordings. In addition to handouts on the topics of the presentations, there were several handouts prepared last year and reprinted for this year's event. The text of the handouts has been mounted on the WWW and is available by accessing the Preservation Directorate Home Page at this address: <http://lcweb.loc.gov/preserv/>.

The American Institute for Conservation of Historic and Artistic Works; the Commission on Preservation and Access; the National Institute for the Conservation of Cultural Property; the Washington Conservation Guild; and, the Conservation Centre for Art & Historic Artifacts of Philadelphia were all invited to be part of the event to provide information about their publications and programmes. Vendors of preservation and conservation products and materials were invited to bring educational material and samples of their products.

The Library of Congress is planning to hold this event next year as part of the Library's celebration of National Library Week, on April 21, 1998. The organisers have started their work to incorporate the feedback and constructive criticism from the public and LC staff, to make changes that will improve and make next year's event even better.

Amparo R. de Torres  
Special Projects Officer  
Conservation Division,  
Library of Congress

## **Permanent Paper Australian Standard**

The preservation of important information in Australia will be made easier with the recent release of a new Standard AS 4003-1996, Permanent Paper.

This standard specifies the requirements for paper to survive in the long-term under normal library and archival conditions. It includes the chemical, fibre and physical characteristics required for both coated and uncoated permanent paper and lists suitable applications for permanent paper.

Chair of the Standards Australian Permanent Paper Committee, Jan Lyall, says: "It is interesting that changes in the industry itself will mean that soon most fine paper produced in Australia will probably comply with the standard.

AS 4003-1996 will greatly assist the consumer by encouraging the use of a symbol and statement of compliance to identify permanent paper which meets the standard's specifications."

## **Conservation Course back in Caracas**

The annual course on the conservation of paper-based documents that used to be held by the National Library of Venezuela was cancelled during the first semester of 1997 due to lack of funds. However, thanks to UNESCO, the course will recommence next September.

## **Translations into Spanish**

Within the translation project of the Commission on Preservation and Access, two documents have been translated into Spanish by Teresa León, official translator at the National Library of Venezuela.

- Preservation and Technology. The Relationship Between Digital and Other Media Conversion Processes: A Structured Glossary of Technical Terms, by M. Stuart Lynn, 1990.
- Magnetic Tape Storage and Handling. A Guide for Libraries and Archives, by National Media Lab, June 1995.

## **“Library Disaster Planning “in Spanish and Russian**

The brochure prepared by Maria Skepastianou and Jean I. Whiffin for the IFLA Section on Preservation and Conservation has been translated into Spanish by Teresa León at the National Library of Venezuela and in Russian, by the Research Centre of Conservation and Restoration of Documents, Russian State Library, from where it is now available.

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